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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 282

Packard-Bell models 21103, U, 21202, U and 21401, U (Ch. T-1) were covered in Photofact Folder 11 — Set 282.

Following is a list of production changes, early and late, covering chassis T-1.

Ch. T-1

EARLY CHANGES

COMPONENT CHANGE

R37 is decreased from 3.3KΩ to 2.2KΩ.

C71 is increased from 56MMF to 120MMF.

TO IMPROVE VERTICAL LINEARITY AND SYNC STABILITY

C38 is increased from .05MFD to .22MFD.

C56 is decreased from .022MFD to .01MFD.

R70 is decreased from 270KΩ to 100KΩ.

R60 is increased from 1.5Meg to 2.2Meg.

R61 is decreased from 33KΩ to 18KΩ.

TO IMPROVE FRINGE RECEPTION

R19, R53 and C24 added when delayed AGC was incorporated into the circuit.

TO PREVENT SYNC COMPRESSION

R28 is increased from 120Ω to 330Ω, later reduced to 220Ω.

TO REMOVE VERTICAL BARS IN PICTURE

A 220KΩ resistor, R76, added from pin 2 of V19 to the green lead of the vertical output transformer (T4).

COMPONENT CHANGE

R58 is increased from 150KΩ to 330KΩ.

LATE CHANGES

TO INCREASE WIDTH

T1, power transformer secondary AC voltage increased from 542V to 565V. The new part number is 89045B.

TO IMPROVE CONTRAST

R37 is decreased from 3.3KΩ to 2.2KΩ.

R1A, contrast control, is decreased from 5KΩ to 1.5KΩ and R37 is omitted.

COMPONENT CHANGE

R53 is increased from 3.3Meg to 4.7Meg.

R70 may be 470KΩ in some sets due to the wide variation in resistance of the vertical hold control (R2).

PACKARD-BELL MODELS 21103, U, 21202, U, 21401, U (Ch. T-1)

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PRODUCTION CHANGES
BULLETIN 136

PRODUCTION CHANGES
BULLETIN 136

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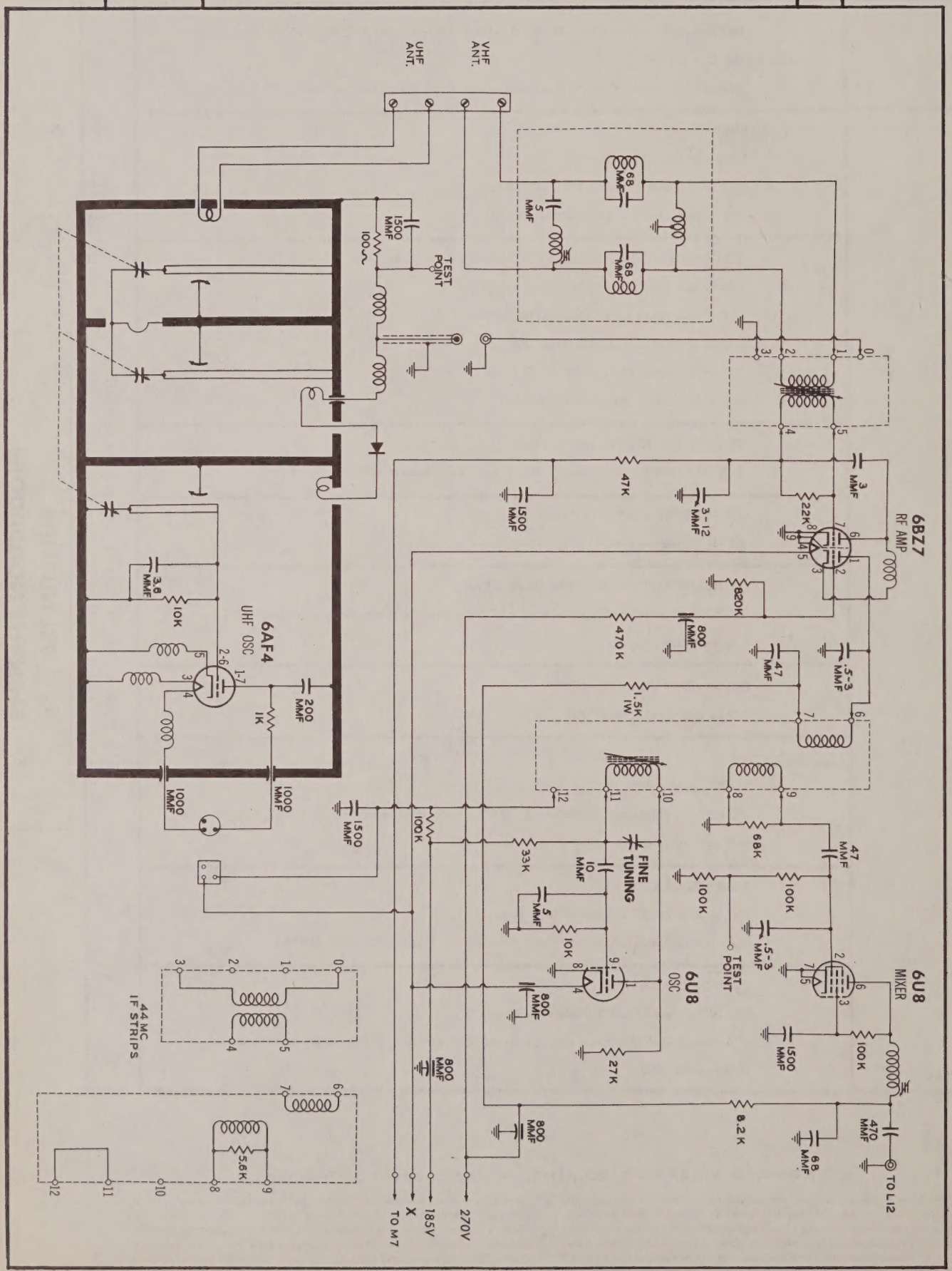
NEW VHF-UHF TUNER

On the latest UHF models the tuner has been changed to part #10540A.

A schematic of this tuner is given in this bulletin.



PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

AMBASSADOR
MODELS A21CLO, A21CV, A21TV

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The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

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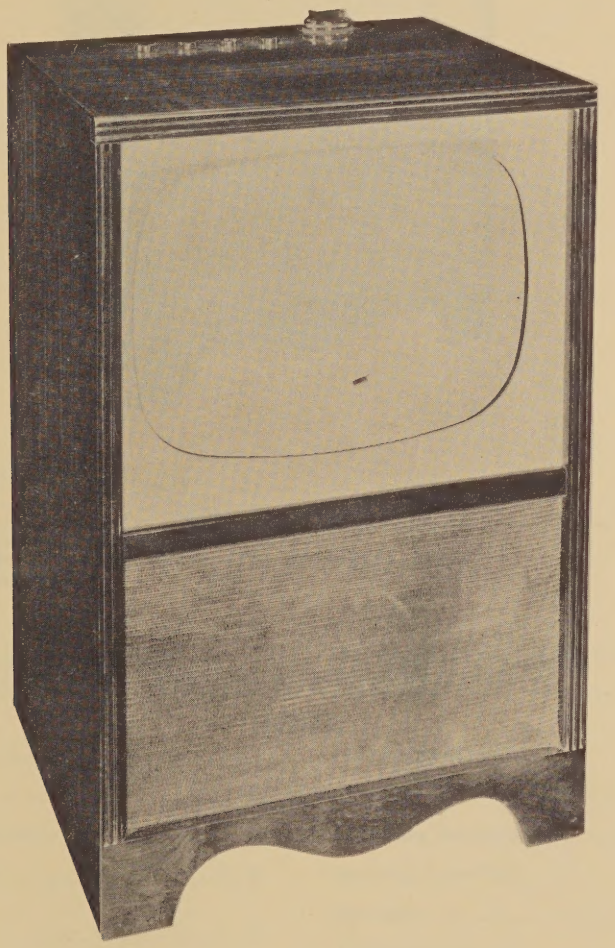

MODEL A21CV

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DATE 11–55 SET 296 FOLDER 2

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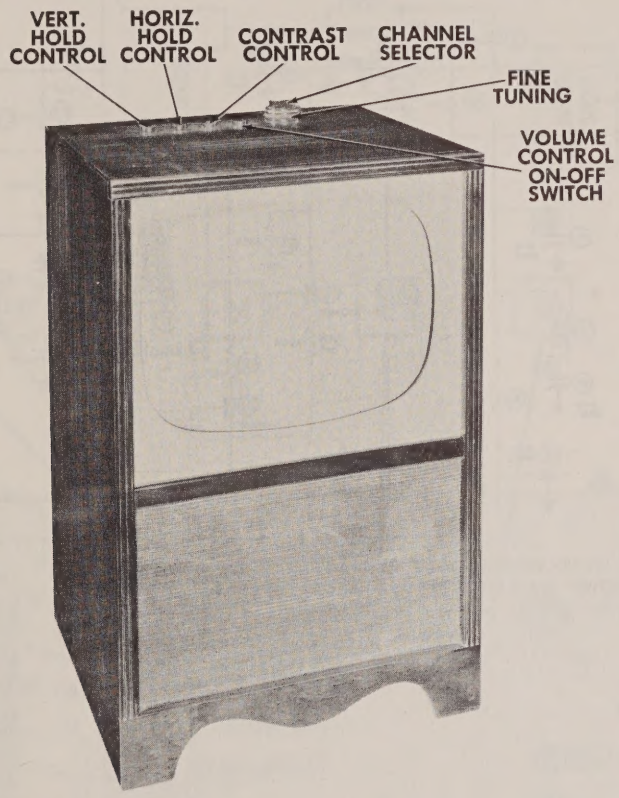
MODELS A21CLO, A21CV, A21TV



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AMBASSADOR
MODELS A21CLO, A21CV, A21TV

AMBASSADOR MODEL A21CV

TRADE NAME	Ambassador Models A21CLO, A21CV, A21TV
SUPPLIER	Allied Purchasing Corp., 401 5th. Ave., New York 16, N.Y.
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.44 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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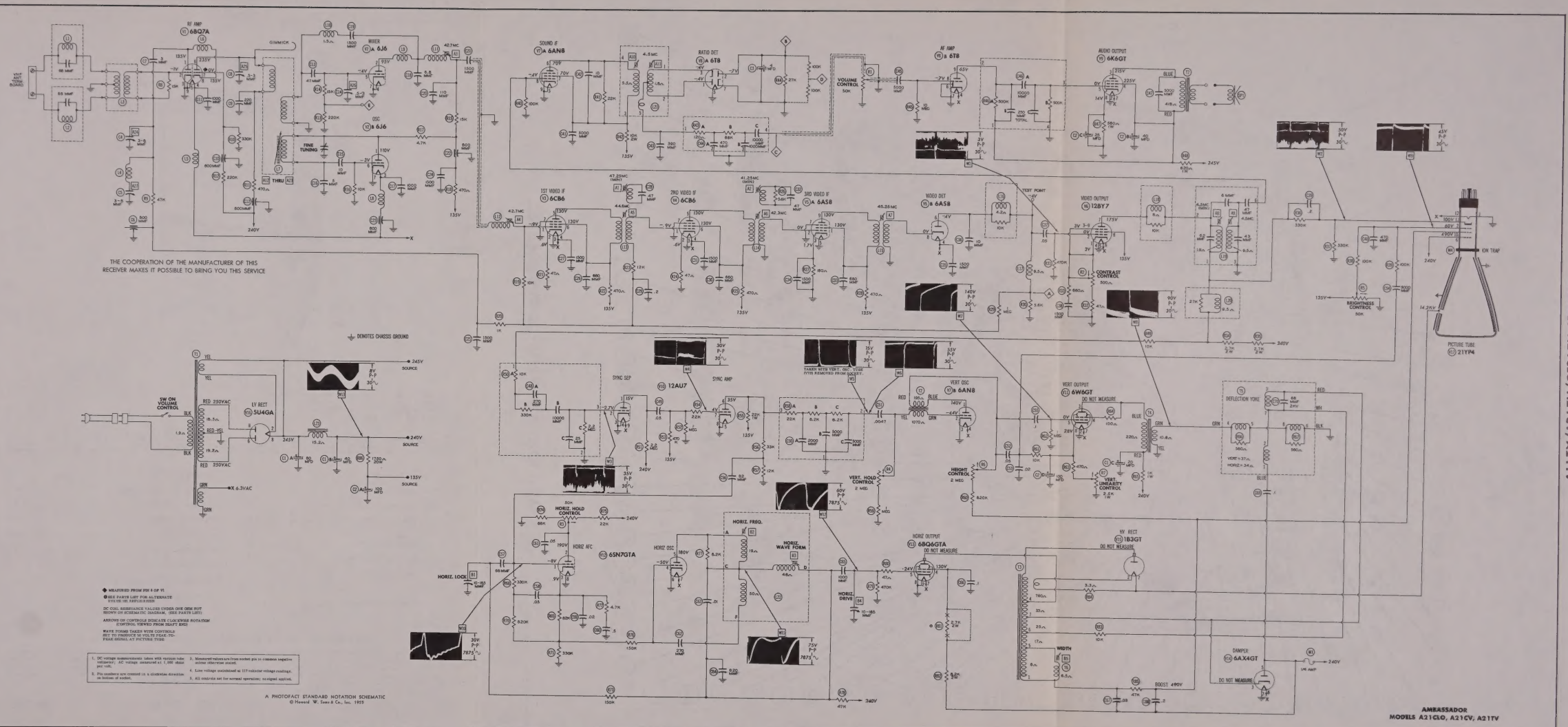
AMBASSADOR
MODELS A21CLO, A21CV, A21TV
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
RF AMP V1 6BQ7A
MIXER V2 A 6J6
OSC V2 B 6J6
SOUND IF V3 A 6AN8
RATIO DET V3 B 6T8
AF AMP V4 6T8
AUDIO OUTPUT V5 6K6GT
1ST VIDEO IF V1 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 A 6AS8
VIDEO DET V5 B 6AS8
VIDEO OUTPUT V6 12BY7
SYNC SEP
SYNC AMP V6 12AU7
VERT OSC V7 B 6AN8
VERT OUTPUT V13 6W6GT
DO NOT MEASURE
HORIZ AFC V15 6SN7GTA
HORIZ OSC
HORIZ OUTPUT V13 6BQ6GTA
DO NOT MEASURE
HV RECT V12 1B3GT
DO NOT MEASURE
DAMPER V14 6AX4GT
DO NOT MEASURE
LV RECT V11 5U4GA
PICTURE TUBE V17 21YP4
ION TRAP
DEFLECTION YOKE
SW ON VOLUME CONTROL
VOLUME CONTROL 50K
CONTRAST CONTROL 500K
BRIGHTNESS CONTROL 50K
VERT. HOLD CONTROL 2 MEG
HEIGHT CONTROL 2 MEG
VERT. LINEARITY CONTROL 2.5K
HORIZ. HOLD CONTROL 50K
HORIZ. FREQ.
HORIZ. WAVE FORM
HORIZ. LOCK
HORIZ. DRIVE
WIDTH
BOOST 490V
TEST POINT
TAKEN WITH VERT. OSC TUBE (V7B) REMOVED FROM SOCKET
FINE TUNING
GIMMICK
THRU
VHF ANT. TERM. BOARD
245V SOURCE
240V SOURCE
135V SOURCE
6.3VAC
◆ MEASURED FROM PIN 8 OF V1
● SEE PARTS LIST FOR ALTERNATE SYSTEM HE EMPLOYED
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements taken with vacuum tube voltmeter). AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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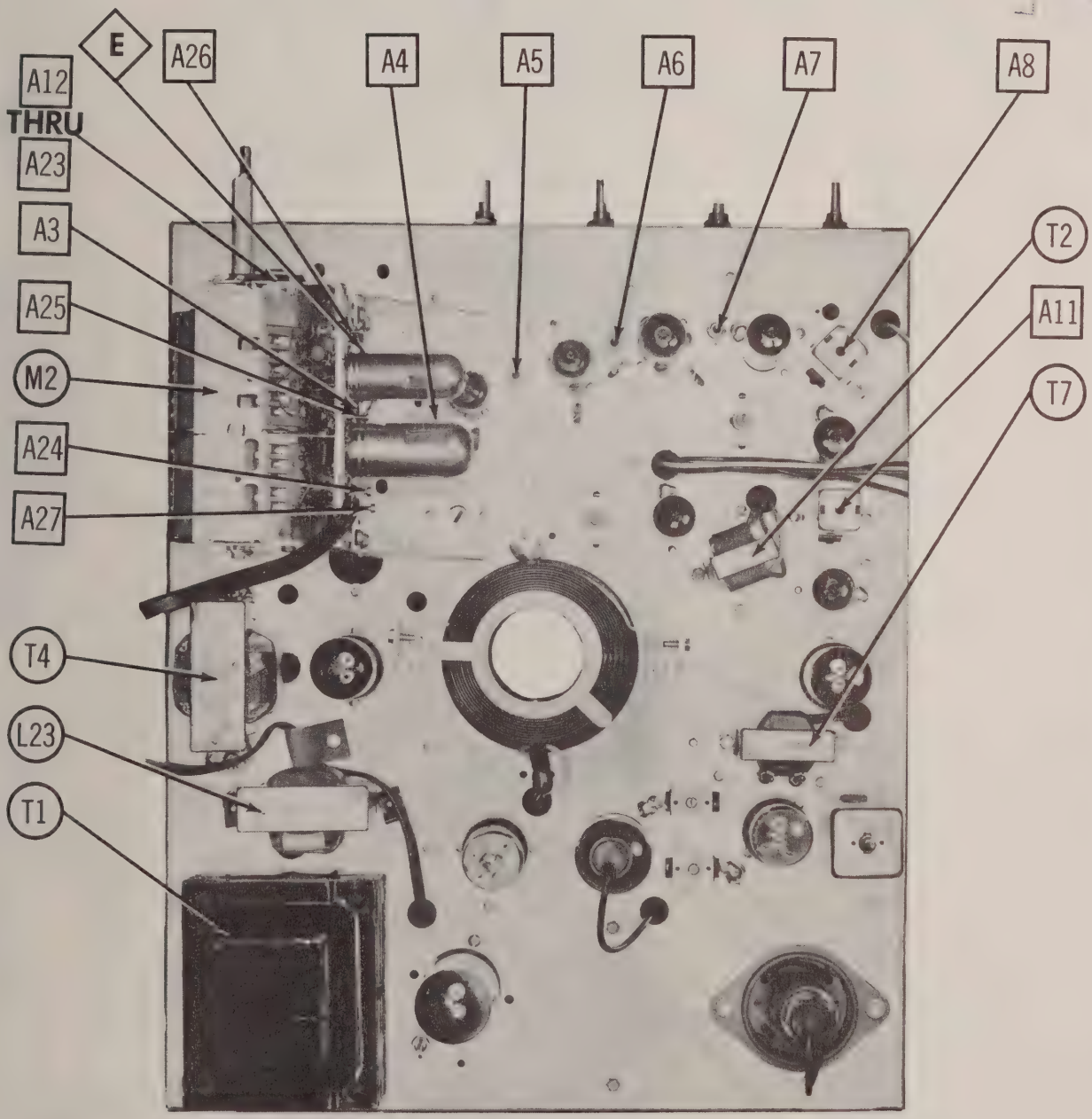
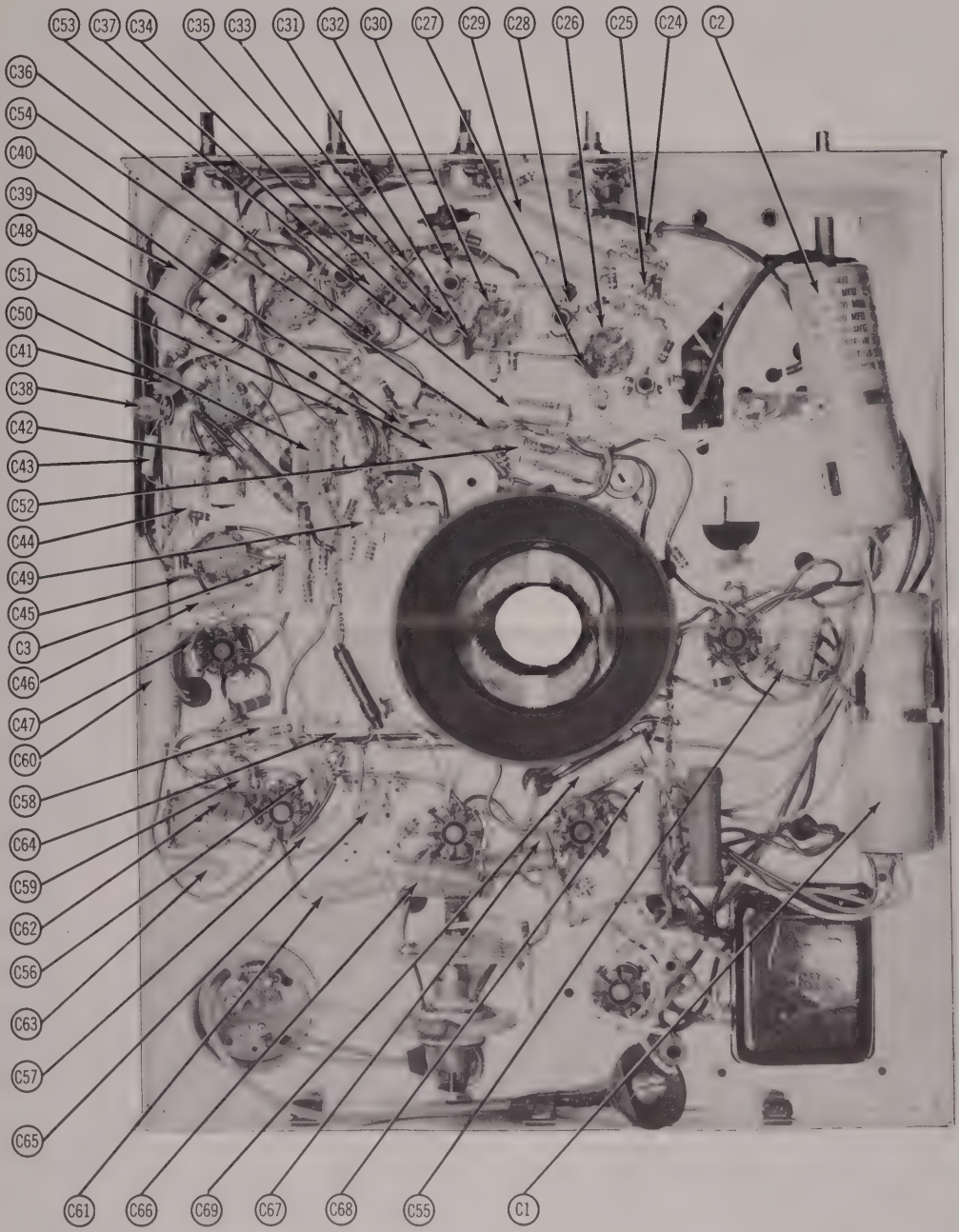


CHASSIS TOP VIEW



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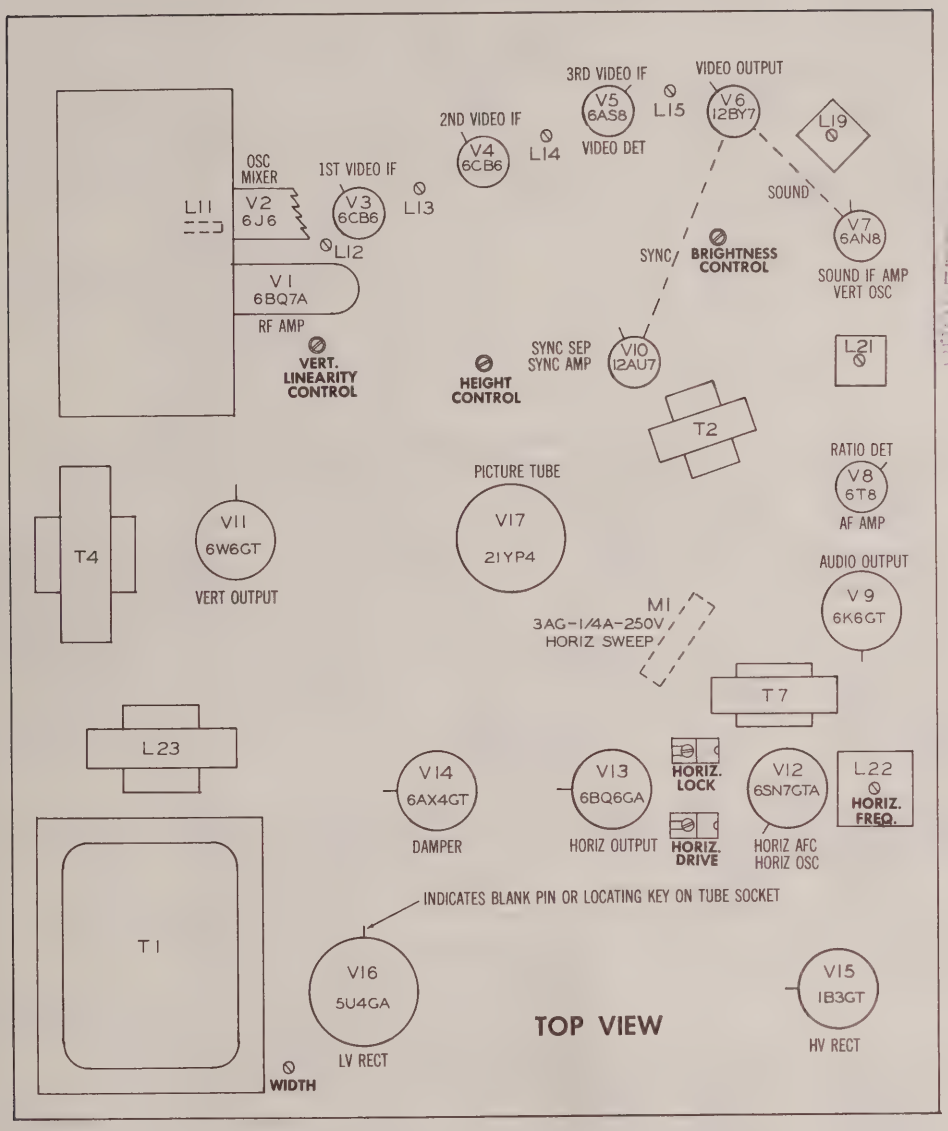
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V16**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster -**V6, V17**
Has pic, no sound - **V7, V8, V9**

SYNC FAILURE
No vert. sync - **V7, V10**
No horiz. sync - **V10, V12**
No vert. or horiz. sync - **V10**

SWEEP FAILURE
No raster, has sound - **V12, V13, V14, V15, V17, Fuse (M1)**
No vertical deflection - **V7, V11**
Poor vert. linearity or foldover - **V7, V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, V15, V16**
Vert. off freq. - **V7, V10**
Horiz. off freq. - **V10, V12**

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator to eliminate the high voltage shock hazard.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	47.25MC (Unmod)	Any	DC probe to point Ⓐ. Common to chassis.	A21	Adjust for MINIMUM deflection.
2.	"	"	41.25MC	"	"	A2	"
3.	"	"	42.7MC	"	"	A3, A4	Attenuate generator output to maintain not more than 1.5 volts at VTVM. Adjust for maximum deflection.
4.	"	"	44.6MC	"	"	A5	"
5.	"	"	42.3MC	"	"	A6	"
6.	"	"	45.25MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	43.5MC (10MC Swp)	41.25MC 42.35MC 45.75MC 47.25MC	Any	Vert. Amp. to point Ⓐ. Low side to chassis.		Check for response similar to Fig. 1. Adjust A3 thru A7 for desired response. A7 adjusts tilt, A3 and A4 adjusts band width, A6 places 42.35MC marker, and A5 places 45.75MC marker. A1 and A2 traps should not require retouching.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to pin 2 (grid) of 12BY7 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 2) to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓑ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to pin 2 (grid) of 12BY7 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point Ⓑ. Common to chassis.	A9, A10	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point Ⓒ. Common to point Ⓓ.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to pin 2 (grid) of 12BY7 (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point Ⓑ. Low side to chassis.	A9, A10	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
10.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A11	Reconnect stabilizing capacitor C3. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

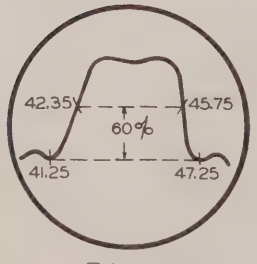


FIG. 1

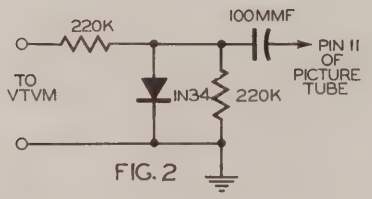


FIG. 2

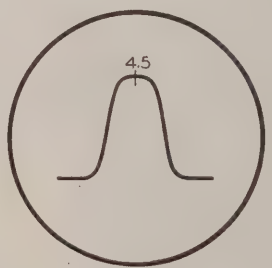


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustments are reached thru a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Use only enough sweep generator output to provide usable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A12	Video marker should be at 60% on response curve. Place sound marker as shown in Fig. 5.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

RF AND MIXER ALIGNMENT

Use only enough sweep generator output to provide usable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. to point (E). Low side to chassis.	A24, A25, A26	Adjust for response similar to Fig. 6 with markers above 90%.
13.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 6. If markers fall below 70% on any channel, make slight compromise adjustments of A24, A25 and A26 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

IF TRAP ALIGNMENT

The IF trap is for the purpose of reducing interference on Channel 2 from transmitters operating in the 40MC band. If such interference is noted on Channel 2, adjust A27 for minimum interference. If no interference is noted, adjust A27 to maximum clockwise position.

FIG. 4

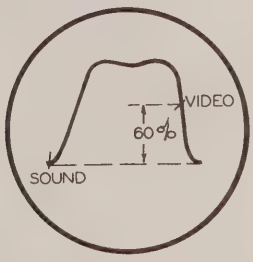


FIG. 5

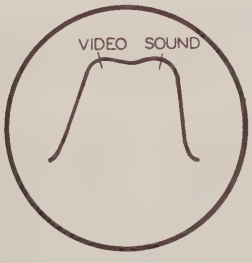
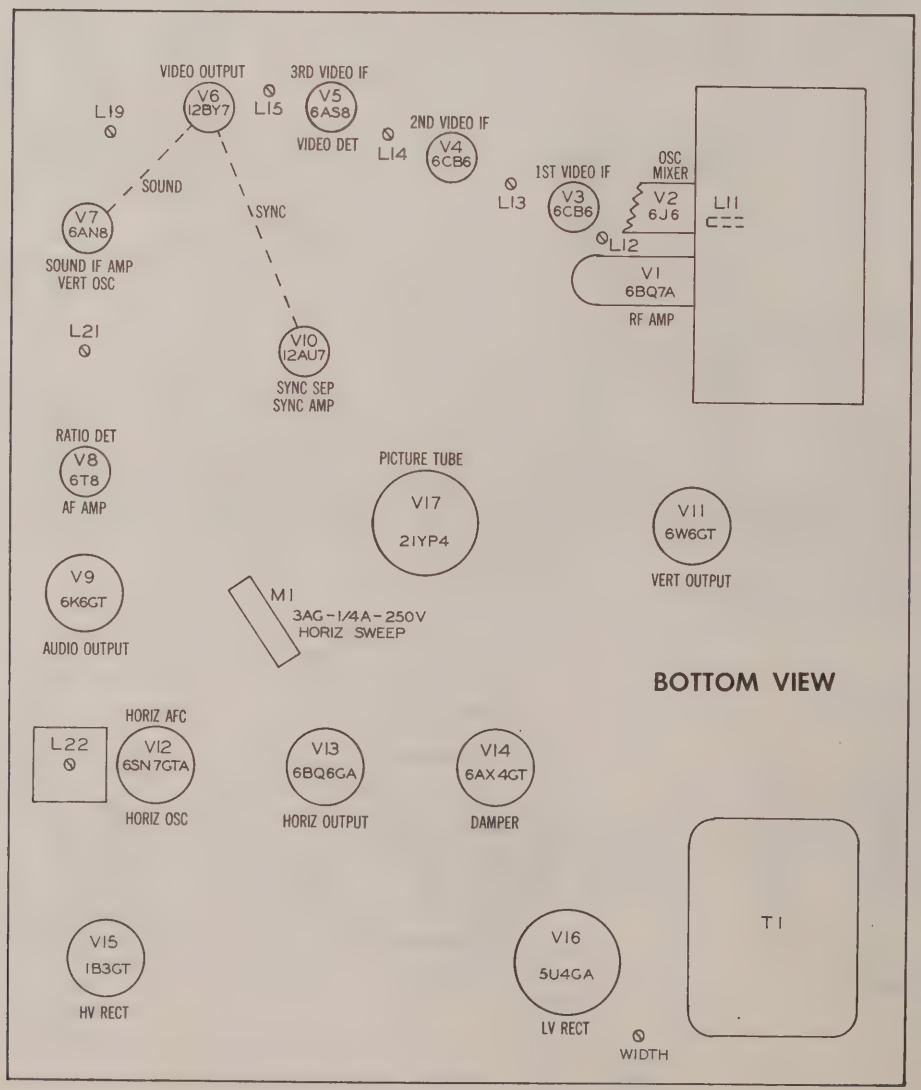


FIG. 6

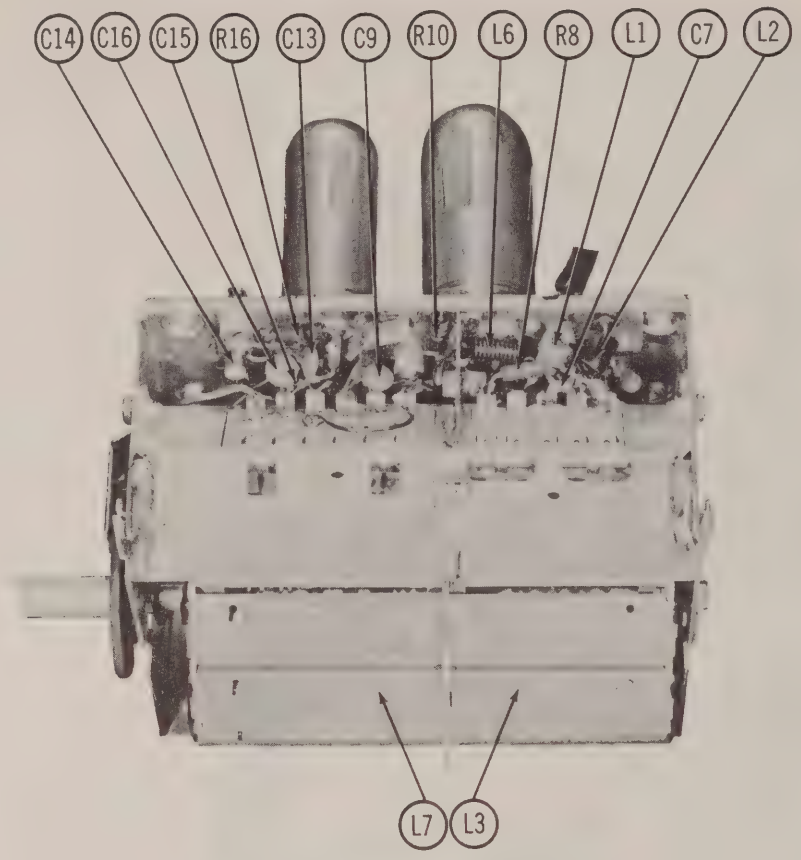
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	1Meg	0Ω	.1Ω	0Ω	†500Ω	140KΩ	INF	0Ω
V 2	6J6	†6.8KΩ	†17KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	0Ω		
V 4	6CB6	1Meg	47Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	0Ω		
V 5	6AS8	†2.3KΩ	.1Ω	180Ω	.1Ω	0Ω	5.6KΩ	0Ω	.1Ω	†2.3KΩ
V 6	12BY7	200Ω	470KΩ	200Ω	0Ω	0Ω	.1Ω	†5.4KΩ	†1.8KΩ	200Ω
V 7	6AN8	▲2.2Meg	2Meg	0Ω	.1Ω	0Ω	†12KΩ	†12KΩ	100KΩ	0Ω
V 8	6T8	INF	27KΩ	INF	.1Ω	0Ω	0Ω	0Ω	10Meg	†500KΩ
V 9	6K6GT	NC	0Ω	†1.2KΩ	†900Ω	500KΩ	NC	.1Ω	560Ω	
V 10	12AU7	†2.2Meg	2.2Meg	0Ω	0Ω	0Ω	†18KΩ	400KΩ	0Ω	.1Ω
V 11	6W6GT	TP	0Ω	†1.2KΩ	†1.3KΩ	1Meg	NC	.1Ω	1.1KΩ	
V 12	6SN7GTA	1.5Meg	†25KΩ	400KΩ	500KΩ	†47KΩ	0Ω	.1Ω	0Ω	
V 13	6BQ6GTA	TP	0Ω	NC	†11KΩ	470KΩ	TP	.1Ω	0Ω	TOP CAP ▲33Ω
V 14	6AX4GT	NC	NC	INF	NC	†15Ω	NC	0Ω	.1Ω	
V 15	1B3GT		PIN8	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲795Ω
V 16	5U4GA	NC	20KΩ	NC	19Ω	NC	18.5Ω	NC	20KΩ	
V 17	21YP4	0Ω	†130KΩ	PIN 6 †15Ω	PIN 10 47KΩ	PIN 11 †180KΩ	PIN 12 .1Ω			

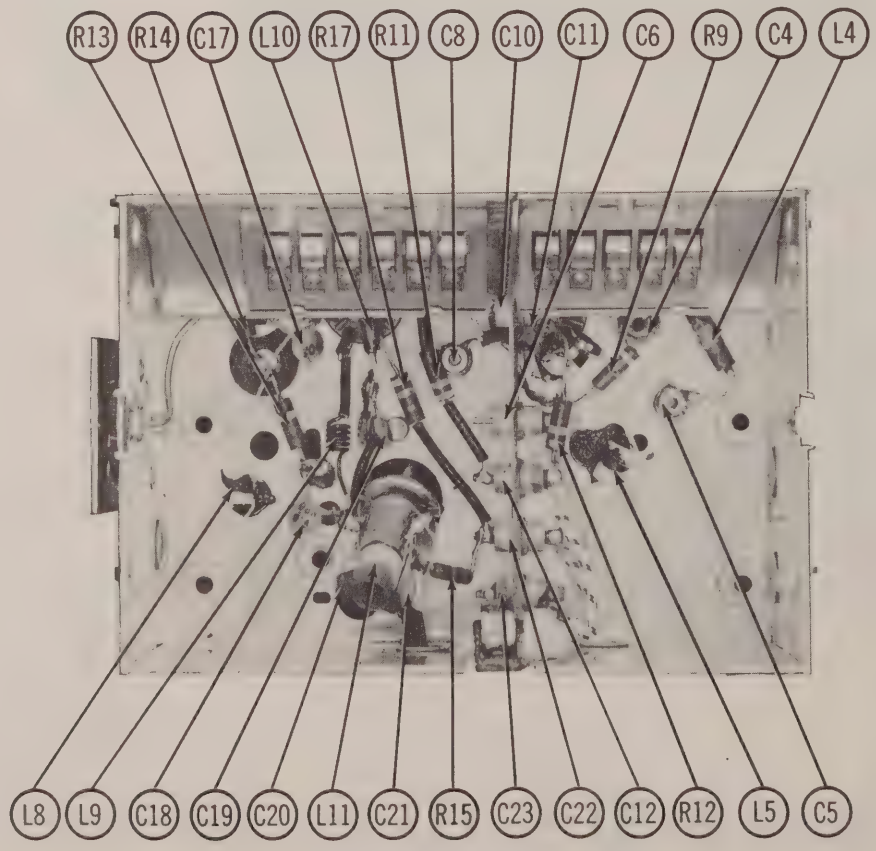
† MEASURED FROM PIN 8 OF V16.
▲ MEASURED FROM PIN 3 OF V14.
TP - TIE POINT
NC - NO CONNECTION



TUBE PLACEMENT CHART

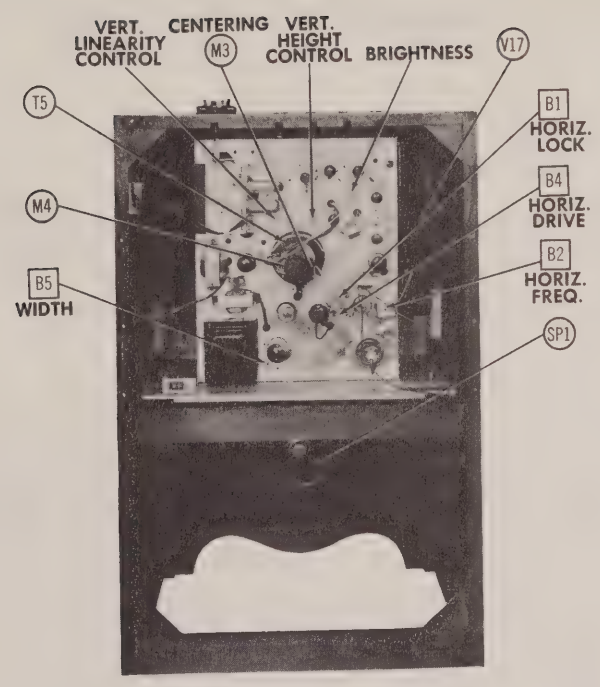


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to the center of its range.

Adjust the horizontal lock trimmer (B1) until picture synchronizes horizontally.

If unable to obtain proper horizontal sync by adjusting B1, continue with alignment of the horizontal oscillator coil (L22) as follows:

1. Set the horizontal frequency slug (B2) and the waveform slug (B3) at their maximum counter clockwise position.
2. Short together terminals "C" and "D" of the horizontal oscillator coil (L22).
3. Set the horizontal hold control to the center of its range.
4. Adjust B2 clockwise until picture just locks in horizontally.
5. Remove short from terminals "C" and "D" of L22. If picture loses sync with short removed, adjust B3 clockwise until picture falls into sync.
6. Connect the vertical input lead of an oscilloscope thru 100KΩ to terminal "C" of L22. Adjust the waveform slug (B3) clockwise until the broad and narrow peaks are of equal amplitude as shown in Fig. 7. While adjusting B3 keep the picture in sync by tuning the horizontal hold control. Disconnect scope from receiver.
7. Set the horizontal hold control fully clockwise and adjust the horizontal lock trimmer (B1) until the picture starts to fall out of horizontal sync.
8. The horizontal holding action should be as follows:
   a. With horizontal hold fully counter clockwise the picture may lose sync when switching off channel and back again.
   b. With the horizontal hold fully clockwise switch off channel and back. The picture should be out of sync or just pulling out of sync.
   c. With horizontal hold control at mid-position the picture should fall in sync when switching off channel and back again.

Adjust the horizontal drive trimmer (B4) counter clockwise until a white vertical ine appears on the left side of the screen. Then adjust B4 clockwise until the white vertical line disappears.

Adjust the horizontal width coil (B5) for a picture slightly wider than necessary to fill the picture mask horizontally.

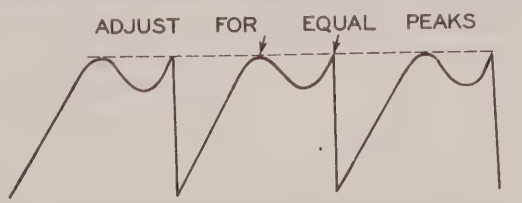


FIG. 7

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V13, V14 and V16. Check adjustments B4 and B5. Check C65, R81, R82, T3, T5A and other associated components.

DRIVE LINES

Check by substitution V13 and V14. Check adjustment B4. Check C65, R81, R82 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V13 and V14. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines ".

PIE CRUST EFFECT

Check by substitution V12, V13 and V14. Check C58, C59 for open. Check L22, R72, R74 and other associated components.

XMAS TREE EFFECT

Check by substitution V12, V13 and V14. Check T3 and T5 for internal arcing. Check L22, C56, C62, C57, R75, R78 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V7 and V11. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check T4, T5B, C1C, C2D, R65, R63 and other associated components.	Check T2, R59, R60, R6, C51, C55 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V7 and V11. Check height and vertical linearity controls for proper operation. Check R60, T4 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V7 and V11. Check R60, R6, T2, C55 and other associated components.

COMPRESSED AT TOP

Check by substitution V7 and V11. Check C2D, R7, R63, T4 and other associated components.

FOLDS

Check by substitution V7 and V11. Check C52, C53, C55, R61, T4, T5B and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V10. Check C48, C49, R51, R53, R55 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V7. Check vertical integrator network. Check T2, R59, R4, C51, and other associated components.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Substitute V12. Check C56, C58, C62, C63, R75, R72 and other associated components.

HORIZONTAL BENDING

Check by substitution V10 and V12. Check components associated with V12.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C37, C39, R32, R34, R35 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A8. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check L16, L18, L20, C37, C39, R36 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check picture tube. Check C37, C39, R36 and other associated components.

SMEAR

Substitute V6. Check L16, L17, L18, L20, C37, C39, R36 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8 and V9. Check stages V8 and V9 using audio signal generator. Apply audio signal across R1.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF stages for component failure or change of value.	Check C44, C45, C46, C47, C2B, R46, R47, R48, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A11 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

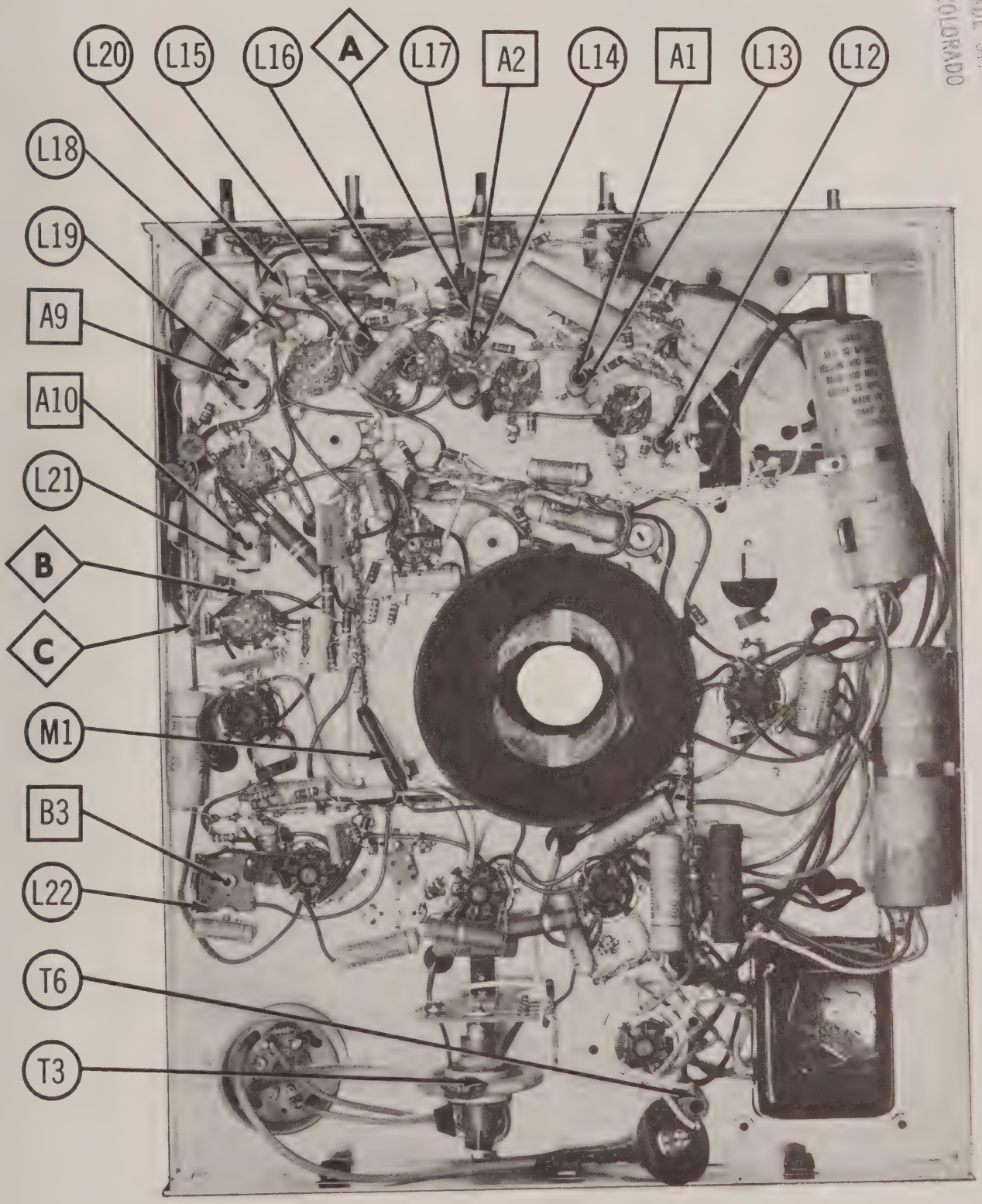
DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V16. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Substitute V16. Check B+ filter and decoupling network.

PROPERTY OF
F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

DENVER, COLORADO

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: Ambassador PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amp.	6BQ7A	6BQ7A	9AJ	
V2	Osc.-Mixer	6J8	6J8	T9F	
V3	1st. Video IF Amp.	6CB6	6CB6	TCM	
V4	2nd.Video IF Amp.	6CB6	6CB6	TCM	
V5	3rd. Video IF Amp.- Video Det.	6AS8	6AS8	9DB	
V6	Video Output	12BY7	12BY7	9BF	
V7	Sound IF Amp.- Ratio Det.-	6AN8	6AN8	9DA	
V8	AF Amp.	6T8	6T8	9E	
V9	Audio Output	6K8GT	6K8GT	T8	
V10	Sync Separator- Sync Amp.	12AU7	12AU7	9A	
V11	Vert. Output	6W6GT	6W6GT	T6	
V12	Horiz. AFC- Horiz. Osc.	6SN7GTA	6SN7GTA	8BD	
V13	Horiz. Output	6BQ6GTA	6BQ6GTA	6AM	
V14	Damper	6AX4GT	6AX4GT	4CG	
V15	HV Rectifier	1B3GT	1B3GT	3C	
V16	LV Rectifier	5U4GA	5U4GA	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Ambassador PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V17	21YP4	21YP4	21YP4	21YP4	21YP4 ③	12L	① Aluminized
		21YP4A ①	21YP4A ①	21YP4A ③	21YP4A ③	12L	② Silver screen

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	VOLT.	REPLACEMENT DATA: Ambassador PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	NOTES
C1A	80	350	18-279	FP378	TM-804020-450	T-180	
B	40	350					
C	30	350					
C2A	100	350	18-280			Q-197	
B	40	350				MT-0225	
C	25	25					
D	100	50					
C3	4	50	18-282	TC30	TD-4-50	MMT-0505	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: Ambassador PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	NOTES
C4	3-8			828-20			
C5	3-8			828-20			
C6	800						
C7	3			TCZ-3R3	NPOA-3R3	ZT-5533	
C8	.5-3			828-3	3125-01-CR5	CT585A	
C9	330			DD-331	811-231	UC-5322	
C10	800						
C11	1000			DD-102	801-001	DC-531	
C12	800						
C13	47			DD-470	831-470	UC-5447	
C14	.5-3			828-3	3125-01-CR5	CT585A	
C15	10			TCZ-10	NPOK-100	ZT-561	
C16	5						
C17	1000			DD-102	801-001	DC-531	
C18	6.8			TCZ-6R8	NPOA-6R8	ZT-5568	
C19	1500			DD-152	801-0015	DC-5215	
C20	110			TCN-110	N750L-111		
C21	1500			DD-153	801-0015	DC-5215	
C22	800						
C23	800						
C24	1500		15-198	DD-152	801-0015	DC-5215	
C25	1500		15-198	DD-152	801-0015	DC-5215	
C26	680		15-231	DD-681	811-681	UC-5368	
C27	1500		15-198	DD-152	801-0015	DC-5215	
C28	47			TCZ-47	NPO-338-47C	ZT-5447	
C29	.3	400	15-182			PT4022	
C30	680		15-231	DD-681	811-681	UC-5368	
C31	1500		15-198	DD-152	801-0015	DC-5215	
C32	47			TCZ-47	NPO-338-47C	ZT-5447	
C33	680		15-231	DD-681	811-681	UC-5368	
C34	1500		15-198	DD-152	801-0015	DC-5215	
C35	1500		15-198	DD-152	801-0015	DC-5215	
C36	10		15-233				
C37	.05	400	15-192	DF-503		PT415	
C38	1500		15-198	DD-152	DD-152	DC-5215	
C39	.3	400	15-182			PT4022	
C40	470		15-199	DD-471	831-471	UC-5347	
C41	5000		15-197	DD-502	811-005	DC-525	
C42	10		15-233				
C43	390	500	15-231	DS-391	GP2K-391	MC243	
C44A	470			DD-471	831-471	UC-5347	
B	1000		†33-101	DD-102	801-001	DC-531	
C	10000			DD-103	811-01	DC-541	
C45	5000		15-197	DD-502	811-005	DC-525	
C46A	10000						
B	250		‡ 33-102	‡PC-80	‡1404-03		
C							
C47	5000		15-197	DD-502	811-005	DC-525	
C48A	270				GP2K-271	UC-5327	
B	1000		*33-103	*PC-260	811-01	DC-531	
C	25				GP1K-250	UC-5425	
C49	.05	400	15-192	DF-503		PT415	

CAPACITORS (cont)

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: Ambassador PART No	CENTRALAB PART No	ERIE PART No	MALLORY PART No	NOTES
C50A	2000					DT622	
B	5000		‡33-100	‡PC-100	‡1405-01	DT625	
C	5000					DT635	
C51	.0047	600	16-210	DS-472	GP2-333-472	DT6247	
C52	.05	600	16-193	DF-503		PT415	
C53	.03	600	16-205	DF-303	811-03	PT412	
C54	5000		15-197	DD-502	811-005	DC-525	
C55	.1	600	16-208	DF-104		PT422	
C56	82	500	15-204	TCZ-82	NPO-337-820		
C57	68	500	15-205	TCZ-68	NPO-337-680ZT-5468		
C58	.05	400	16-189	DF-503		PT415	
C59	.02	400	16-205	DF-303	811-03	PT412	
C60	.1	300	15-184			PT402	
C61	.05	400	16-189	DF-503		PT415	
C62	270	500	15-225	TCZ-270	NPO-335-271		
C63	.01	400	16-206	DS-103	GP2-333-103	PT411	
C64	820	500	15-206				
C65	1000	500	15-207	DS-102	GP2L-102	MC255	
C66	.1	400	16-207	DF-104		PT401	
C67	.03	600	16-213	DF-303		PT413	
C68	.2	400	15-188			PT4022	
C69	.1	400	16-207	DF-104		PT401	
C70	68	2000		DD30-680	3KV-680	DC30468	

† Items C44A, C44B, C44C, R43A and R43B are combined in one unit.
‡ Items C48A, C48B, C48C, R48A and R48B are combined in one unit.
When replacing items separately C48B and C48C should total 350MMF.
* Items C48A, C48B, C48C, R50A, R50B and R50C are combined in one unit.
♦ Items C50A, C50B, C50C, R58A, R58B and R58C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESIST-ANCE	WATTS	REPLACEMENT DATA: Ambassador PART No	IRC PART No	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No	INSTALLATION NOTES
R1A	500KΩ	½	25-27	QI1-133	A47-500K-2	B-50-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-13	Not Req.	UB-36	Attach to R1A
R2A	500Ω	½	25-28	QI1-103	A47-500-S	B-4	U-2	Contrast
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	50KΩ	½	25-30	QI1-123	A47-50K-S	B-31	U-35	Horiz. Hold
B	Shaft		Not Req.	FS-3	Not Req.	Not Req.	Not Req.	Attach to R3A
R4A	2Meg	½	25-29	QI1-139	A47-2Meg-S	B-75	U-56	Vert. Hold
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R5A	50KΩ	½	25-26	QI1-123	A47-50K-S	BZ-31	SU-35	Brightness
B	Shaft		Not Req.	RQ	FKS-1/4	Not Req.	Not Req.	Attach to R5A
R6A	2Meg	½	25-25	QI1-139	A47-2Meg-S	BZ-75	SU-56	Height
B	Shaft		Not Req.	RQ	FKS-1/4	Not Req.	Not Req.	Attach to R6A
R7	2500Ω	1	25-24		39-2500			Vert. Linearity - wire-wound

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: Ambassador PART No.	IRC PART No.	NOTES
R8	15KΩ	½		BTS-15K	
R9	47KΩ	½		BTS-47K	
R10	330KΩ	½		BTS-330K	
R11	470Ω	½		BTS-470	
R12	220KΩ	½		BTS-220K	
R13	220KΩ	½		BTS-220K	
R14	15KΩ	½		BTS-15K	
R15	18KΩ	½		BTS-18K	
R16	10KΩ	½		BTS-10K	
R17	4700Ω	½		BTS-4700	
R18	470Ω	½	60-897	BTS-470	
R19	10KΩ	½	60-780	BTS-10K	
R20	1000Ω	½	60-873	BTS-1000	
R21	47Ω	½	60-896	BTS-47	
R22	470Ω	½	60-897	BTS-470	
R23	12KΩ	½	60-811	BTS-12K	
R24	47Ω	½	60-896	BTS-47	
R25	470Ω	½	60-897	BTS-470	
R26	5600Ω	½	60-874	BTS-5600	
R27	180Ω	½	60-860	BTS-180	
R28	470Ω	½	60-897	BTS-470	
R29	1Meg	½	60-879	BTS-1Meg	
R30	5600Ω	½	60-874	BTS-5600	
R31	470KΩ	½	60-881	BTS-470K	
R32	47Ω	½	60-896	BTS-47	
R33	680Ω	½	60-708	BTS-680	
R34	2700Ω	2	60-815	BTS-2700	
R35	2700Ω	2	60-815	BTS-2700	
R36	330KΩ	½	60-899	BTS-330K	
R37	330KΩ	½	60-899	BTS-330K	
R38	100KΩ	½	60-901	BTS-100K	
R39	100KΩ	½	60-901	BTS-100K	
R40	100KΩ	½	60-901	BTS-100K	
R41	22KΩ	½	60-744	BTS-22K	
R42	10KΩ	½	60-761	BTS-10K	
R43A	120Ω	½		BTS-120	
B	68KΩ	½	† 33-101	BTS-68K	
C	27KΩ	½	60-764	BTS-27K	
R44	10Meg	½	60-781	BTS-10Meg	
R45A	500KΩ	½	† 33-102	BTS-470K	Note 1
B	500KΩ	½		BTS-470K	
R47	560Ω	1	60-869	BTA-560	

† Items R43A, R43B, C44A, C44B and C44C are combined in one unit.
‡ Items R48A, R48B, C46A, C46B and C46C are combined in one unit.
* Items R50A, R50B, R50C, C48A, C48B and C48C are combined in one unit.
♦ Items R58A, R58B, R58C, C50A, C50B, C50C are combined in one unit.
Note 1. Some versions use a 250KΩ resistor in this application.
Note 2. Not used in some versions.

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: Ambassador PART No.	IRC PART No.	NOTES
R48	82Ω	1	60-704	BTA-820	
R49	10KΩ	½	60-780	BTS-10K	
R50A	10KΩ	½		BTS-10K	
B	330K	½	*33-103	BTS-330K	
C	2.2Meg	½		BTS-2.2Meg	
R51	3.3Meg	½	60-888	BTS-3.3Meg	
R52	1Meg	½	60-879	BTS-1Meg	
R53	470KΩ	½	60-881	BTS-470K	
R54	22KΩ	½	60-744	BTS-22K	
R55	22KΩ	1	60-743	BTA-22K	
R56	33KΩ	½	60-895	BTS-33K	
R57	12KΩ	½	60-811	BTS-12K	
R58A	820Ω	½		BTS-22K	
B	8200Ω	½	♦33-100	BTS-8200	
C	8200Ω	½		BTS-8200	
R59	1Meg	½	60-879	BTS-1Meg	
R60	820KΩ	½	60-700	BTS-820K	
R61	10KΩ	½	60-780	BTS-10K	
R62	1Meg	½	60-879	BTS-1Meg	
R63	470Ω	½	60-897	BTS-470	
R64	100Ω	½	60-752	BTS-100	
R65	100KΩ	½	60-705	BTA-1000	
R66	56Ω	½		BTS-560	
R67	560Ω	½		BTS-560	
R68	330KΩ	½	60-899	BTS-330K	
R69	82KΩ 5%	½	60-703	BTS-82K 5%	
R70	820KΩ	½	60-700	BTS-820K	
R71	330KΩ 5%	½	60-787	BTS-330K 5%	
R72	4700Ω	½	60-759	BTS-4700	
R73	150KΩ	½	60-701	BTS-150K	
R74	68KΩ	½	60-809	BTS-68K	
R75	22KΩ	½	60-744	BTS-22K	
R76	150KΩ 5%	½	60-702	BTS-150K 5%	
R77	8200Ω	½	60-775	BTS-8200	
R78	47KΩ	½	60-880	BTS-47K	
R79	470KΩ	½	60-881	BTS-470K	
R80	47Ω	½	60-896	BTS-47	
R81	2700Ω	2		BTS-2700	Note 2
R82	8200Ω	2	60-706	BTS-8200	
R83	10KΩ	½	60-780	BTS-10K	
R84	3.3Ω	½	60-891		
R85	47KΩ	½	60-880	BTS-47K	
R86	175Ω	20	60-866	SD-175Ω	

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	SEC 1	SEC 2	REPLACEMENT DATA: Ambassador PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ⑤ 1.44A	498VCT ⑥ .330ADC	6VAC ⑥ 3A	80-389		P-8078 ① ④		P-8332 ① ③	26R33 ④	
	SEC 3	SEC 4	SEC 5							
	6.3VAC ⑥ 8.7A									

① Enlarge cut-out. Drill new mounting holes.
② Tape 7.3V ⑥ .8A winding. Parallel and phase 8.3V ⑥ 7.1A and 1.2A windings for Sec. #3.
③ Use high voltage tape on Sec. #1 only. Tape low tape. Parallel and phase 5.3V ⑥ 6.5A windings for Sec. #3.
④ Tape 5V ⑥ 3A winding. Parallel and phase 5.3V ⑥ 5A windings for Sec. #3.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Ambassador PART No.	Halldorson PART No.	Merit PART No.	RCA PART No.	Ram PART No.	Stancor TYPE No.	Thordarson PART No.	Triad PART No.
T2	Vert.Osc. Trans.	80-258	B6702	A-3003	209T1 ①	V605	A-8125	26A03	A-97X
T3	Horiz.Output Trans.	80-270	F9641 * ①	HVO-9 * ②	230T1 *①	X080 *①	A-8255 *	FLY-78 *	D-19 *①
T4	Vert.Output Trans.	80-269	Z1802	A-3036	204T2 ①	V307	A-8144	26S72	A-108X
T5A	Yoke-Horiz.(23MM)	10-810 ②	DF805 ③	MDF-73	222D1 ③	Y7G72943	DY-11A ③	Y-10 ③ ④	Y-19-①
B	Vert. (37MM)			③ ④		④	④	④	③ ④
T6	Width Coil Q-8.5MH	10-504		MWC-8 ③	21UR1	20UR15	WC-8	WC-22	WC-12 ③

① Drill new mounting hole(s).
② Includes capacitor C70, resistors R66, and R67.
③ Use original rear cover and centering device.
④ Use original horizontal yoke damping network.
⑤ Enlarge mounting hole.
⑥ Connect to coded blue and green terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	4	9	9	9	9	5	5	9
	7	8	8	8	Jumper 7 & 8	4	4	Jumper 7 & 8
	6	See Note ⑦	See Note ⑦	See Note ⑦	See Note ⑦	See Note ⑦	See Note ⑦	See Note ⑦
	8	7	7	7	7	2	2	7
	1	1	1	1	1	1	1	1
Connect Width Coil Across ⟶	5 & 1	3 & 1	3 & 1	3 & 1	3 & 1	2 & 1	2 & 1	3 & 1
Special Notes ⟶	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦

⑦ Connect R83 in series with C70 across terminals #3 and #7 of yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: Ambassador PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T7	6.6KΩ	3.9Ω	80-271	Z1U3	A-3931	A-3878	24S52	S-7X	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Ambassador PART No.	QUAM PART No.	NOTES
SP1	7"	PM	3.9Ω	79-390	-7A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Ambassador PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	IF Trap	0Ω						Wound on 68MMF cap.
L2	IF Trap	0Ω						Wound on 68MMF cap.
L3	Ant. Coils	0Ω	CT 0Ω					
L4	IF Trap	1Ω						
L5	Fil. Choke	0Ω						
L6	Neut. Coil	0Ω						
L7	RF, Mixer Grid & Osc. Coils	0Ω						
L8	Fil. Choke	0Ω						
L9	RF Coil	0Ω						
L10	Feedback Coil	1.5Ω						
L11	Conv. Plate	0Ω						
L12	1st. Video IF	.2Ω		10-805	17-4522 *	TV-130 *	6219 *	
L13	2nd. Video IF	.1Ω	.1Ω	10-805			6232	Includes 47.25MC trap
L14	3rd. Video IF	.1Ω	.1Ω	10-807				Includes 41.25MC trap
L15	4th. Video IF	.1Ω	.1Ω	10-808	17-4523	TV-130	6219	
L16	Series Peaking Coil	4.3Ω		18-813	19-3100 ♦	TV-181 ♦	6177 ♦	103 Microhenries, wound on 10KΩ resistor
L17	Shunt Peaking Coil	9.5Ω		18-814	19-3500		6174	470 Microhenries
L18	Series Peaking Coil	8Ω		18-811	19-3300 ♦		6155 ♦	315 Microhenries, wound on 10KΩ resistor

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Ambassador PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L19A B	4.5MC Trap Sound IF	1.9Ω		10-554				
L20	Shunt Peaking Coil	9.5Ω		10-612	19-4400 ▲		4566 ▲	433 Microhenries, wound on 27KΩ resistor
L21	Ratio Det.	5.5Ω	1.8Ω CT	10-553	17-3497	TV-115	6205	Tertiary winding -.6Ω
L22	Horiz. Osc.	19Ω	50Ω	10-609	20-1402 ♦	TV-162 ♦	6183 ♦	Waveform winding -48Ω

* Use one winding only.
■ Parallel with 10KΩ resistor.
▲ Parallel with 27KΩ resistor.
♦ Reverse coil mounting in can.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA Ambassador PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	.220ADC	15.2Ω	.65 HY	80-302	C5041 ①		C-2328 ①		C-21X

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Ambassador PART No. FUSE	Ambassador PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG P/T	1/4A 250V	43-13		318.250 (3AG-P/T-1/4A)		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	Ambassador PART No.	NOTES
M2	Tuner	TV1009	VHF
M3	Centering Device		Part of Yoke Cover (T5)
M4	Ion Trap		
B1	Trimmer Cap.	20-147	Horiz. Lock (10-165MMF)
B4	Trimmer Cap.	20-147	Horiz. Lock (10-165MMF)
	Knob	52-143	Channel Selector
	Knob	52-144	Fine tuning
	Knob	52-149	Contrast
	Knob	52-150	On-off-volume
	Knob	52-151	Vert. Hold
	Knob	52-152	Horiz. Hold
	Safety Glass	40-223	
	Mask	14-134	

PROPERTY OF
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3924 MEADE ST.
DENVER, COLORADO

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V12, V13, V14 and V15. Check fuse, M1. Check waveform, W12.

If Satisfactory	If Unsatisfactory
Check T3, T5A, T6, C69, C67, C68, C66, R81, R82 and other associated components.	Check L22, R78, R75, R74, R77, C61, C62, C63, C65 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V13, V14 and V16. Check C65, R81, R82, T3, T5A and other associated components. Check adjustments B4 and B5.

BLOOMING

Check by substitution V13, V14, V15 and V16. Check C65, R81, R82 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

KEYSTONE EFFECT

Check T5 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the top of the chassis. Remove rear cover and supply power to the set.

Set the horizontal hold control at the center of its range .

Adjust the horizontal lock trimmer (B1) until picture synchronizes horizontally.

If picture fails to lock in sync refer to "Horizontal Sweep Circuit Adjustments" on page 11.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L21) located on top of the chassis.

FUSES

One fuse is used for horizontal and vertical sweep circuit protection. (For location see tube placement chart).

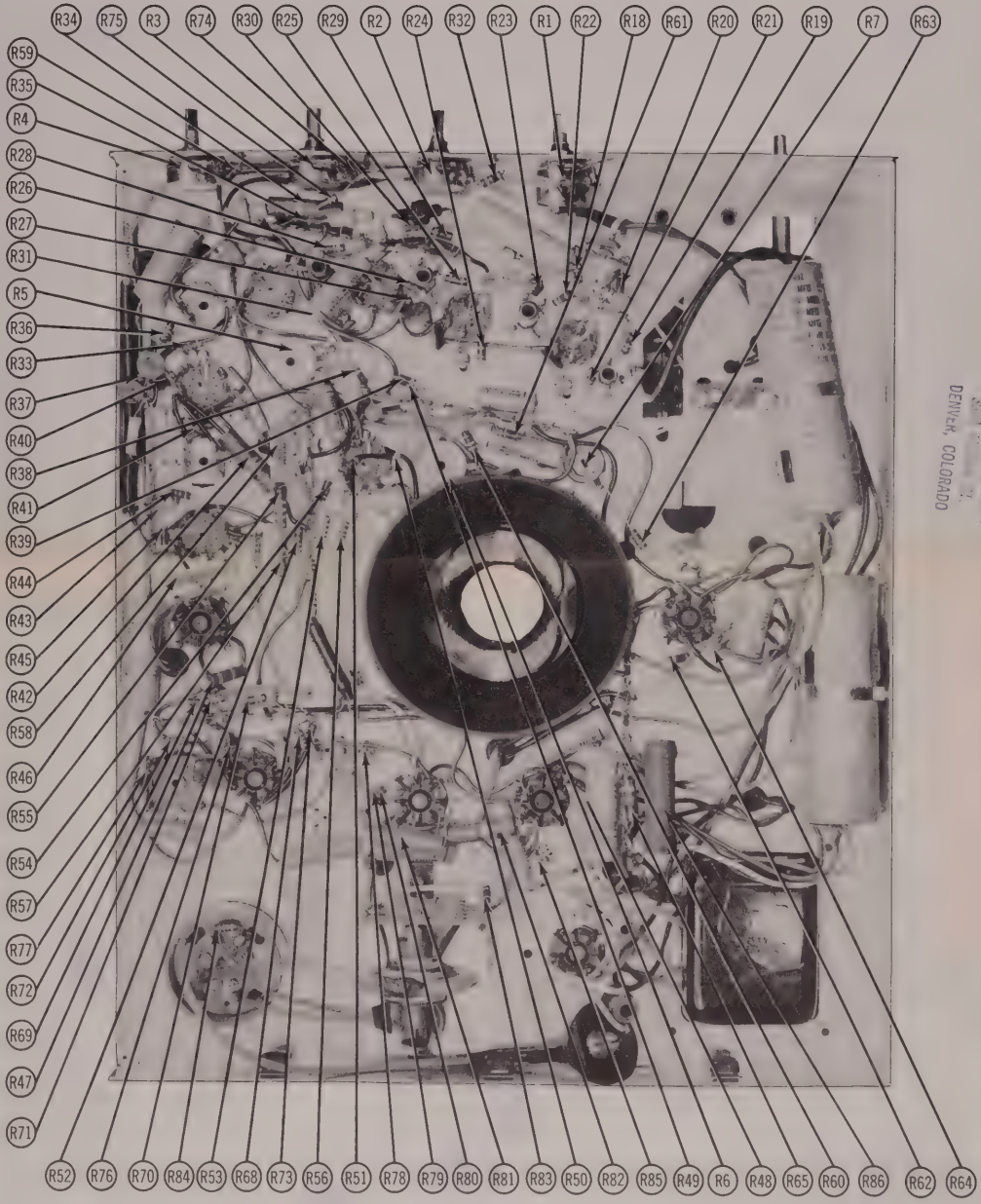
CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL WITH MOUNTING BOARD

1. Remove 6 push on type control knobs from top panel of cabinet.
2. Remove 12 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect speaker leads.
4. Remove 2 wood screws. Remove antenna terminal strip.
5. Remove 4 chassis mounting board bolts. Remove chassis with mounting board.
6. Remove 2 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PAGE 19

PAGE 20

COLUMBIA RECORDS
MODEL 340

COLUMBIA RECORDS
MODEL 340

TRADE NAME	Columbia Records Model 340
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N. Y.
TYPE SET	AC Operated AM-FM Superheterodyne Tuner
TUBES (Eight)	Types 6CB6 FM RF Amp., 12AT7 FM Mixer-Osc., 6BE6 AM Conv., 6BA6 FM-AM IF Amp., 6AU6 2nd. FM IF Amp., 6T8 Ratio Det.-AM Det.-AF Amp., 6U5 Tuning Ind., 6C4 Cath. Follower
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .1 Amp. @ 117 Volts AC
TUNING-RANGE-BROADCAST	535-1600KC — FREQ. MOD. 88MC-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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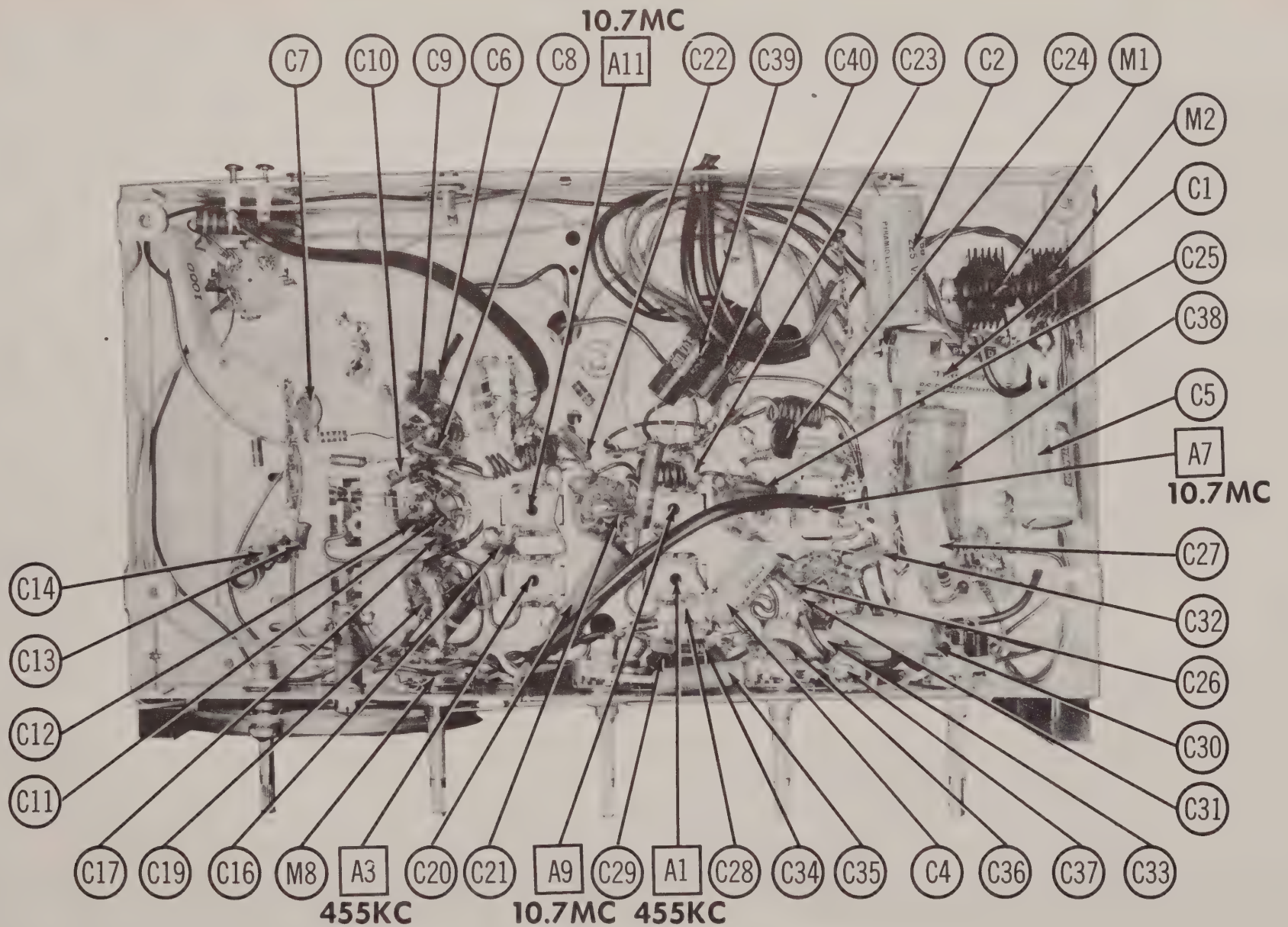
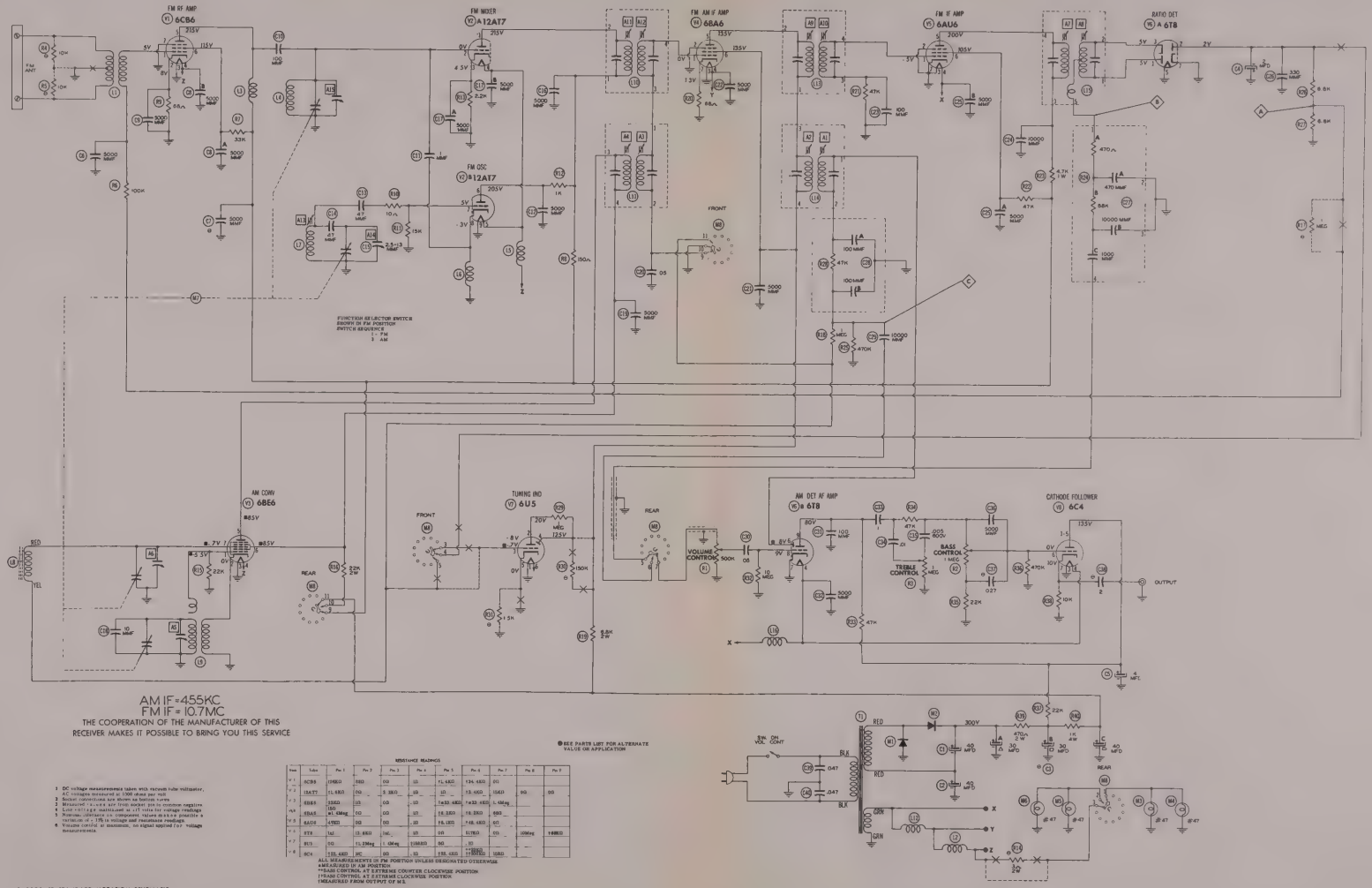


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



AM I.F. = 455KC
FM I.F. = 10.7MC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1 DC voltage measurements taken with vacuum tube voltmeter.
AC voltages measured at 1000 ohms per volt.
2 Socket connections are shown as bottom views.
3 Measured values are from socket pin to common negative.
4 Line voltage maintained at 117 volts for voltage readings.
5 Values of resistance and capacitance may deviate plus or minus a tolerance of ± 10% in voltage and resistance readings.
6 Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Tube	Type	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V-1	6CB6	10KΩ	68Ω	0Ω	0Ω	0Ω	11.4KΩ	134.4KΩ	0Ω	
V-2	12AT7	11.4KΩ	0Ω	3.3KΩ	0Ω	0Ω	13.4KΩ	15KΩ	0Ω	0Ω
V-3	6BE6	330Ω	0Ω	0Ω	0Ω	0Ω	1●33.4KΩ	1●33.4KΩ	1.4MEG	
V-4	6BA6	330Ω 41.4KΩ	0Ω	0Ω	0Ω	0Ω	16.2KΩ	16.2KΩ	68Ω	
V-5	6AU6	47KΩ	0Ω	0Ω	0Ω	0Ω	96.2Ω	98.6KΩ	0Ω	
V-6	6T8	1MΩ	15.6KΩ	1MΩ	0Ω	0Ω	417KΩ	0Ω	100Meg	198KΩ
V-7	6U5	0Ω	15.2Meg	1.4Meg	198KΩ	0Ω	0Ω			
V-8	6C4	135.4KΩ	0Ω	0Ω	0Ω	0Ω	135.4KΩ	198KΩ **198KΩ	198KΩ	

ALL MEASUREMENTS IN FM POSITION UNLESS DESIGNATED OTHERWISE
AM READINGS IN AM POSITION
**BASS CONTROL AT EXTREME COUNTER CLOCKWISE POSITION
*TREBLE CONTROL AT EXTREME CLOCKWISE POSITION
†MEASURED FROM OUTPUT OF M-2

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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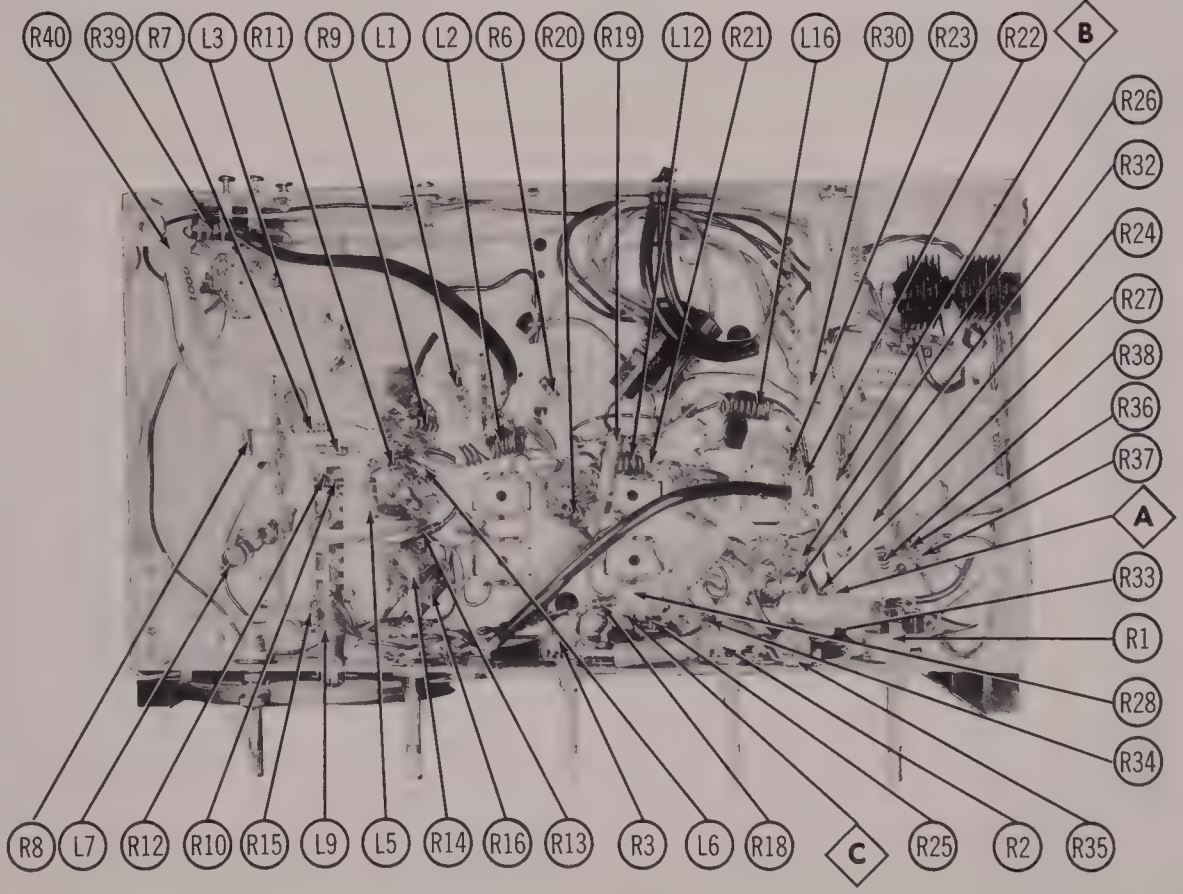


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPER
L. F
3924
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400~ Mod)	AM	Short out AM Osc. section of tuning gang with short clip lead.	DC probe to point (C). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1600KC	"	Remove short. Tuning gang fully open.	"	A5	"
3.		"	1400KC		1400KC	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Use 100K resistor in series with DC probe.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference.	DC probe to point (A). Common to chassis.	A7	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe thru 100K to point (B). Common to point (A).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	"	"	"	DC probe to point (A). Common to chassis.	A9, A10	Adjust for maximum deflection.
7.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A11, A12	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference.	Vert. Amp. to point (A). Low side to chassis.	A7, A9, A10, A11, A12	Disconnect stabilizing capacitor (C4). Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. thru 100K to point B. Low side to chassis.	A8	Reconnect stabilizing capacitor (C4). Adjust A8 so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines. Proceed with Step 8.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	270Ω Carbon Resistor	Across FM Ant. terminal.	87MC (Unmod.)	FM	Tuning gang fully closed.	DC probe to point (A). Common to chassis.	A13, A14	Adjust A13 for maximum deflection. Adjust L4 (RF coil) for maximum deflection by expanding or compressing coils.
9.	"	"	109MC	"	Tuning gang fully open.	"	A14, A15	Adjust for maximum deflection.

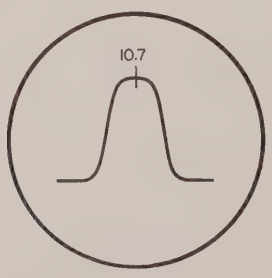


FIG. 1

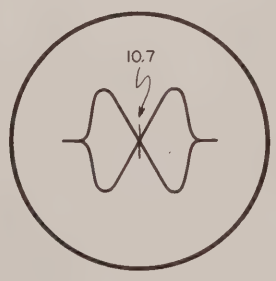


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Columbia Records PART No.	STANDARD REPLACEMENT		
V1	FM RF Amp.	6CB6	6CB6	7CM	
V2	FM Mixer-Osc.	12AT7	12AT7	9A	
V3	AM Conv.	6BE6	6BE6	7CH	
V4	FM-AM IF Amp.	6BA6	6BA6	7BK	
V5	2nd. FM IF Amp.	6AU6	6AU6	7BK	
V6	Ratio Det. AM Det. - AF Amp.	6T8	6T8	9E	
V7	Tuning Indicator	6U5	6U5	6R	
V8	Cathode Follower	6C4	6C4	6BG	

ELECTROLYTIC CAPACITORS

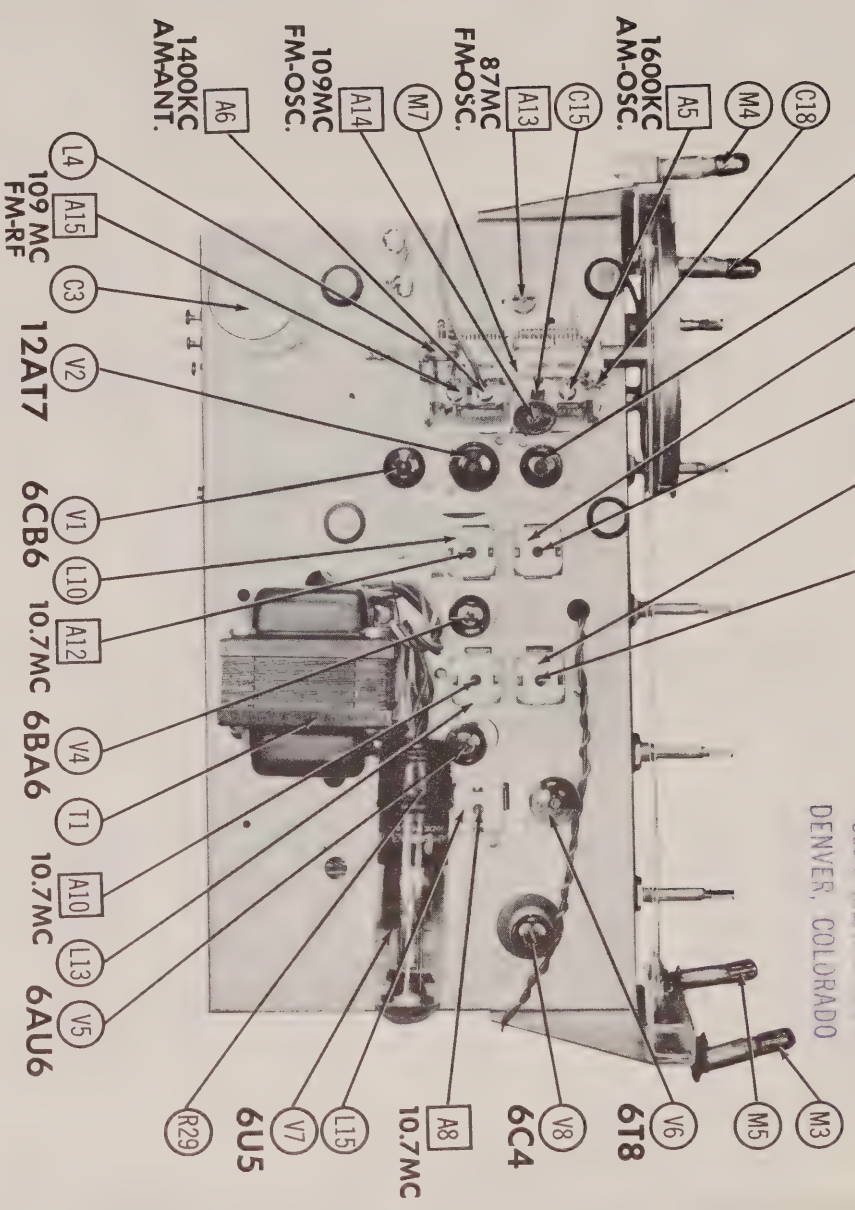
ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	Columbia Records PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1	40	150	CE1011	TC49	TD-40-150	FM-1540	
C2	40	150	CE1011	TC49	TD-40-150	FM-1540	
C3A	30	▲450		FP377	TM-T40-450	T-170	Note 1
B	30	■450					Note 1
C	40	▲450					Note 1
C4	2	50	CE1023	TC302	TD-2-50	FM-0505	
C5	4	450	CE1026	TC70	TD-4-450	FM-4504	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	Columbia Records PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	
C6	5000			DD-502	811-005	DC525	
C7	5000			DD-502	811-005	DC525	Note 2
C8A	5000			DD2-502	811-005	DC525	
B	5000				811-005	DC525	
C9	5000			DD-502	811-005	DC525	
C10	100			D6-101	GP1K-101	UC-531	
C11	1			TCZ-1	NPOA-010		
C12	5000			DD-502	811-005	DC525	
C13	47			TCZ-47	NPO-338-470	ZT-5447	
C14	47			TCZ-47	NPO-338-470	ZT-5447	
C15	2.5-13		CETR-3-12	822-BZ	TS2A-3	ST-553-Z	
C16	5000			DD-502	811-005	DC525	
C17A	5000			DD2-502	811-005	DC525	
B	5000				811-005	DC525	
C18	10		CCT10	TCZ-10	NPOA-100	ZT-541	
C19	5000			DD-502	811-005	DC525	
C20	.05	200		DF-503		PT415	
C21	5000			DD-502	811-005	DC525	
C22	5000			DD-502	811-005	DC525	
C23	100			D6-101	GP1K-101	UC-531	
C24	10000			DD-103	811-01	DC511	
C25A	5000			DD2-502	811-005	DC525	
B	5000				811-005	DC525	
C26	330			D6-331	811-331		
C27A	470				811-471	UC-5347	
B	10000		♦	♦PC-225	811-01	DC511	
C	1000				801-001	DC521	
C28A	100		†	†PC50	†1403-01	UC-531	
B	100					UC-531	
C29	10000			DD-103	811-01	DC511	
C30	.05	200		DF-503		PT415	
C31	100			D6-101	GP1K-101	UC-531	
C32	5000			DD-502	811-005	DC525	
C33	.1	400		DF-104		PT401	
C34	.01	200		D6-103	GP3-333-103	PT411	
C35	.005	600		D6-502	GP2-333-502	PT625	
C36	5000			DD-502	811-005	DC525	
C37	.027						Note 3

CHASSIS—TOP VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	Columbia Records PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	
C38	.2	400				PT402	Note 4
C39	.047	400		DF-503		PT4147	
C40	.047	400		DF-503		PT4147	

Note 1. Some versions may use a triple 40MMF unit (Part No. CE1028) in this application.
Note 2. Not used in some versions.
Note 3. Some versions may use a .02 MMF unit in this application.
Note 4. Some versions may use a .2MMF unit in this application.
♦ Items C27A, C27B, C27C, R24A and R24B are combined in one unit.
† Items C28A, C28B, and R28 are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Columbia Records PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	VC-73	Q13-133	A47-500K-Z	AB-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A.
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A.
R2A	1Meg	½	VC-66	Q11-137	A47-1Meg-S	AB-69	U-54	Bass
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A.
R3A	1Meg	½	VC-66	Q11-137	A47-1Meg-S	AB-69	U-54	Treble
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Columbia Records PART No.	IRC PART No.	
R4	10KΩ	½		BTS-10K	Note 1
R5	10KΩ	½		BTS-10K	Note 1
R6q	100KΩ	½		BTS-100K	
R7	33KΩ	½		BTS-33K	
R8	150Ω	½		BTS-150	
R9	68Ω	½		BTS-68	
R10	10Ω	½		BTS-10	
R11	15KΩ 5%	½		BTS-15K 5%	
R12	1000Ω	½		BTS-1000	
R13	2200Ω	½		BTS-2200	
R14	3Ω	2			Note 3
R15	22KΩ 5%	½		BTS-22K 5%	
R16	22KΩ	2		BTA-22K	Note 2
R17	1Meg	½		BTS-1Meg	Note 3
R18	1Meg	½		BTS-1Meg	
R19	6800Ω	2		BTB-6800	
R20	68Ω	½		BTS-68	
R21	47KΩ	½		BTS-47K	
R22	47KΩ	½		BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Columbia Records PART No.	IRC PART No.	
R23	4700Ω	1		BTA-4700	
R24A	470Ω	½		BTS-470	
B	68KΩ	½		BTS-68K	
R25	470KΩ	½		BTS-470K	
R26	6800Ω 5%	½		BTS-6800 5%	
R27	6800Ω 5%	½		BTS-6800 5%	
R28	47KΩ	½		BTS-47K	
R29	1Meg	½		BTS-1Meg	
R30	150KΩ	½		BTS-150K	Note 3
R31	1500Ω	½		BTS-1500	Note 3
R32	10Meg	½		BTS-10Meg	
R33	47KΩ	½		BTS-47K	
R34	47KΩ	½		BTS-47K	
R35	22KΩ 5%	½		BTS-22K 5%	
R36	470KΩ	½		BTS-470K	
R37	22KΩ 5%	½		BTS-22K 5%	
R38	10KΩ	½		BTS-10K	
R39	470Ω	2		BTB-470	
R40	1000Ω	4		PW4-1000	

Note 1. Used when antenna coil has no center tap.
Note 2. Some versions use a 8200Ω 1W resistor in this application.
Note 3. Not used in some versions.
♦ Items C27A, C27B, C27C, R24A, R24B are combined in one unit.
† Items C28A, C28B, R28 are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	122VAC	6.3VAC		PT-1007					
	ⓐ.1A	.058A	ⓐ2.7A							

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

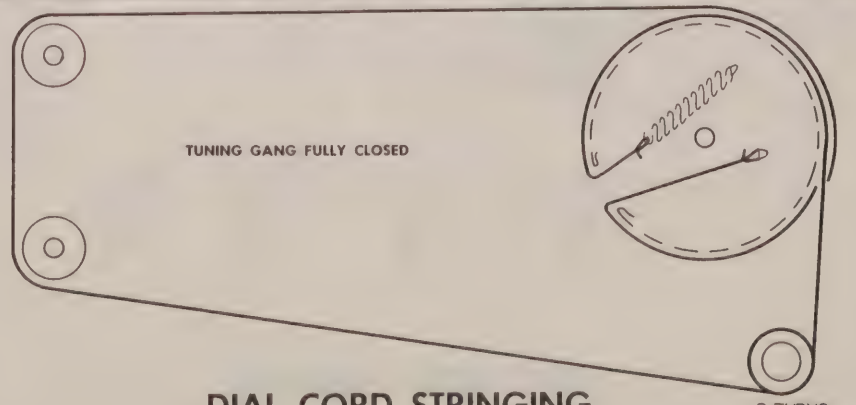
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Columbia Records PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0ΩCT	0Ω	LC47				
L2	Fil. Choke	0Ω			19-1000		4602	1 Microhenry
L3	RF Choke	.2Ω		LC46	19-1001		4604	1.8 Microhenries
L4	FM RF Coil	0Ω		LC41				
L5	Fil. Choke	.4Ω		LC17	19-1004		4529	5 Microhenries
L6	Cathode Choke	.2Ω		LC46	19-1001		4604	1.8 Microhenries
L7	FM Osc. Coil	0Ω		LC40				
L8	AM Ant. Coil	1.2Ω		LPFE16				
L9	AM Osc. Coil	.7Ω	9Ω	LC10	14-1073		69-Osc.	
L10	1st FM IF	.7Ω	.7Ω	LF58	16-3487	FM-254	1463	
L11	1st AM IF	17Ω	17Ω	LF54	16-6758	BC-352	12-C1	
L12	Fil. Choke	0Ω			19-1000		4602	1 Microhenry
L13	2nd FM IF	.7Ω	.7Ω	LF52	16-3487	FM-254	1463	
L14	2nd AM IF	10.5Ω	10.5Ω	LF59	16-6758	BC-353	12-C2	
L15	Ratio Det.	1.8Ω	.5ΩCT	LF53	17-3492	FM-255	1465	Tertiary Winding=.3Ω
L16	Fil. Choke	0Ω			19-1000		4602	1 Microhenry

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	Columbia Records PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.058		1003A	RS0-75	6S75	8J1	75	
M2	.058		1003A	RS0-75	6S75	8J1	75	

MISCELLANEOUS

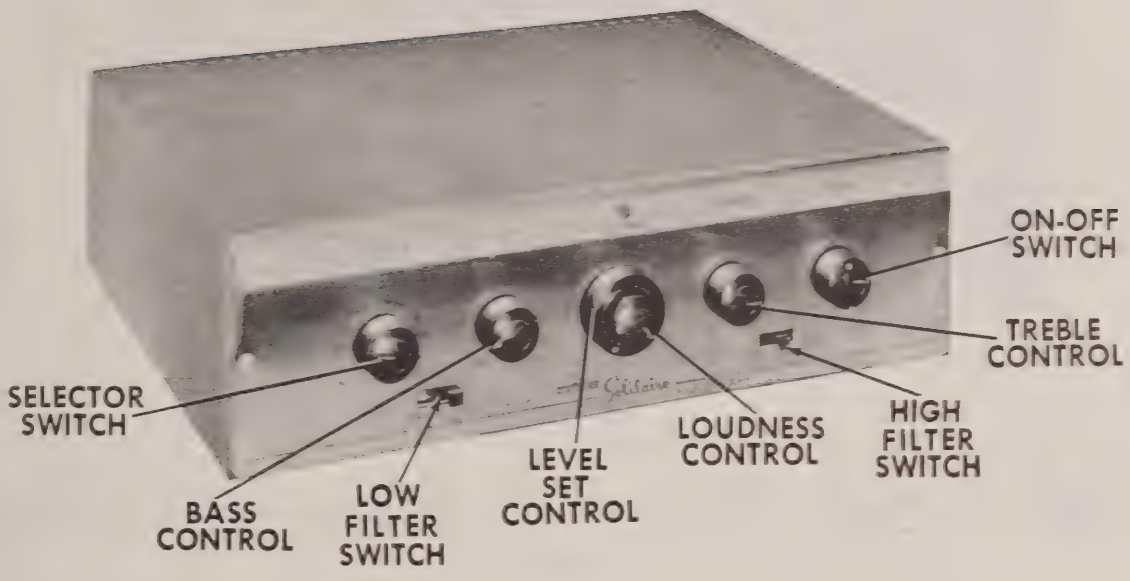
ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M3	Dial Light		#47, FM Dial
M4	Dial Light		#47, FM Dial
M5	Dial Light		#47, AM Dial
M6	Dial Light		#47, AM Dial
M7	Tuning Cap	CV-66	4 Gang, AM Sections (33-495MMF, 20-220MMF)
M8	Switch	SW-40	AM-FM (Rotary-Wafer Type, 4 Pole-2 Position)
	Cabinet	CA1023	
	Knob	KN340	Control (5 Used)
	Dial Scale	DS1000 A/F	



DIAL CORD STRINGING

PROPERTY OF
L. F. BLANKENSHIP
3020 MEADE ST.
DENVER, COLORADO

CRAFTSMEN
MODEL C250 "Solitaire"



CRAFTSMEN
MODEL C250 "Solitaire"

TRADE NAME	Craftsmen Model C250 "Solitaire"
MANUFACTURER	Radio Craftsmen, Inc., 4401 N. Ravenswood Ave., Chicago, Ill.
TYPE SET	AC Operated 5 Channel 20 Watt Audio Amplifier With Preamplifier & Equalizer
TUBES (Seven)	Types: 12AX7 Phono Preamp. -Cath. Follower, 12AX7, Preamp. -AF Amp., 6U8 AF Amp. - Cath. Follower, 6SL7GT AF Amp. -Phase Inv., (2) 6L6G Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.92 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		CRAFTSMEN PART No.	STANDARD REPLACEMENT		
V1	Phono Preamp. - Cathode Follower	12AX7	12AX7	9A	
V2	Preamp. -AF Amp.	12AX7	12AX7	9A	
V3	AF Amp. -Cathode Follower	6U8	6U8	9AE	
V4	AF Amp. -Phase Inv.	6SL7GT	6SL7GT	8BD	
V5	Audio Output	6L6	6L6	7S	
V6	Audio Output	6L6	6L6	7S	
V7	Rectifier	5V4G	5V4G	5L	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	CRAFTSMEN PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	■40	450		FP378	TM-3130	T-180	
B	▲60	450					
C	▲20	400			TM-3131	Q-185	
C2A	▲40	350					
B	■40	300					
C	▲30	250		TC26	TD-25-25	FM-0225	
C3	25	25		TC3501	TD-100-50	MTH-5010	
C4	100	50					

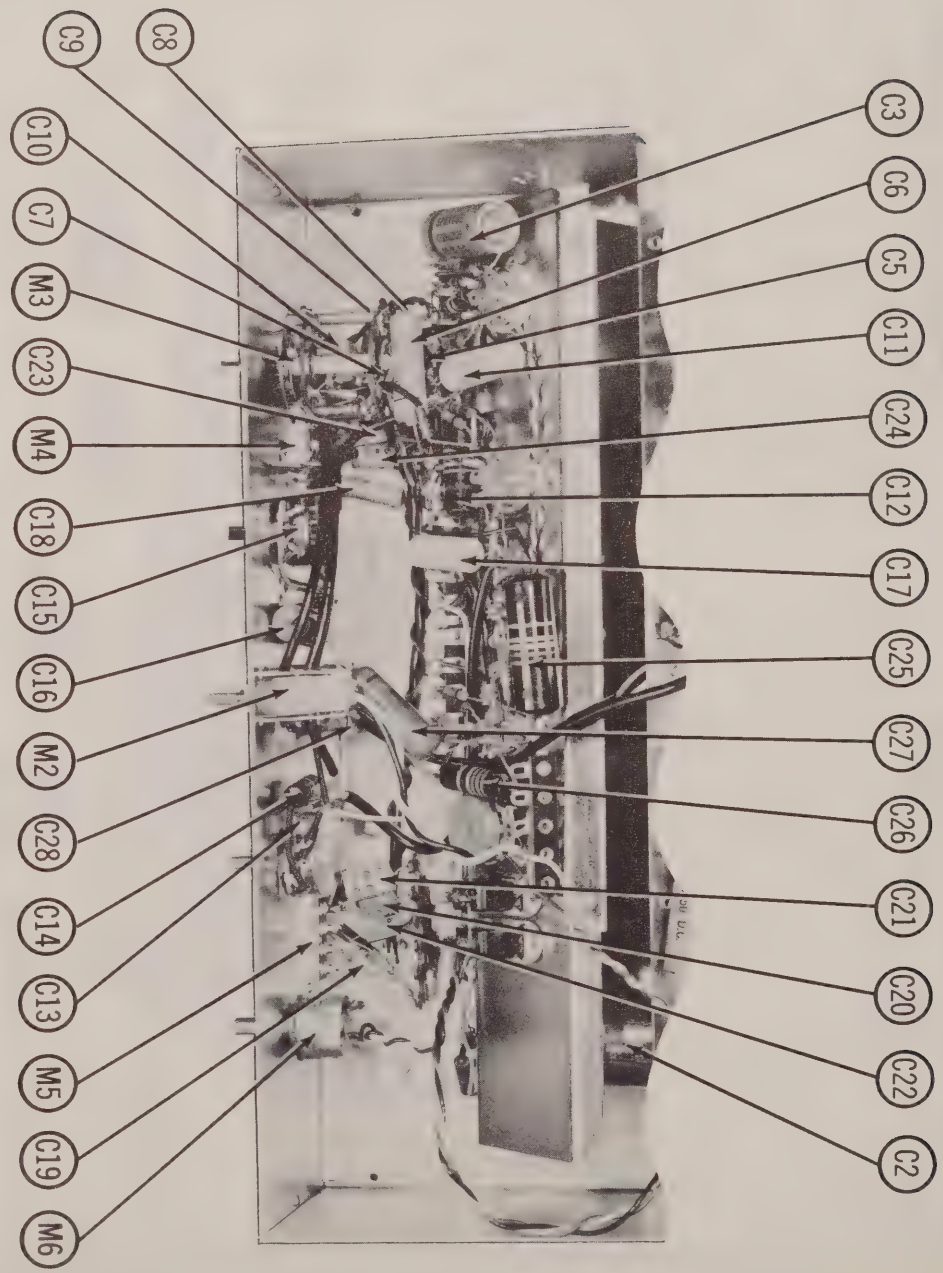
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	CRAFTSMEN PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	
C5	.1	400		DF-503		PT4147	
C6	.047	400				MCE457	
C7	2000	500					
C8	470	500		D6-101	801-101	UC-531	
C9	100						
C10	1500			DF-303		PT4133	
C11	.033	400				PT401	
C12	.1	400					
C13	330	500					
C14	.0033	400					
C15	.0056	400					
C16	.056	400					
C17	.033	400		DF-303		PT4133	
C18	.0018	400		D6-182	GP2-333-182		
C19	330	500					
C20	390	500					
C21	560	500					
C22	100	500		TCZ-100	NPO-337-101	MCE235	
C23	560	500					
C24	390	500					
C25	.22	400					
C26	.033	400					
C27	.1	200		DF-104		PT401	
C28A	200		♦				
B	100						
C	4500						
D	4500						
C29	100	500		TCZ-100	NPO-337-101	MCE235	
C30	150	500		TCZ-150	NPO-334-151	MCE236	
C31	.033	400					
C32	.1	400					
C33	.1	400					
C34	.01	400					
C35	.01	600					

♦ Items C28A, C28B, C28C, C28D, R42A, R42B and volume control are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CRAFTSMEN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	26S056	Q13-133	A47-500K-S	B-50	U-48	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.
R2A	500KΩ	½	26S058					Level Set - Panel
B	1Meg With 90KΩ Stop	½						Loudness tapped at 400K & 800K-rear. See note.
R3A	500KΩ	½	26S056	Q13-133	A47-500K-S	B-50	U-48	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A.
R4A	5000Ω	½	26S045-25CL	Q11-114	A47-5000-S	BX-10	8U-14	Hum Null
B	Shaft		Not Req.	RQ	FKS-1/4	Not Req.	Not Req.	Attach to R4A.

Note-Control has a special printed circuit network that contains R42A, R42B, C28A, C28B, C28C & C28D in this unit.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CRAFTSMEN PART No.	IRC PART No.	
R5	22KΩ	½		BTS-22K	
R6	680Ω	½		BTS-680	
R7	82KΩ 5%	1		BTA-82K 5%	
R8	150KΩ 5%	½		BTS-150K 5%	
R9	150KΩ 5%	½		BTS-150K 5%	
R10	3.6Meg 5%	½		BTS-3.6Meg 5%	
R11	1Meg 5%	½		BTS-1Meg 5%	
R12	1Meg	½		BTS-1Meg	
R13	1800Ω	½		BTS-1800	
R14	120KΩ	½		BTS-120K	
R15	56KΩ 5%	½		BTS-56K 5%	
R16	43KΩ 5%	½		BTS-43K 5%	
R17	15KΩ 5%	½		BTS-15K 5%	
R18	20KΩ 5%	½		BTS-20K 5%	
R19	15KΩ 5%	½		BTS-15K 5%	
R20	470KΩ	½		BTS-470K	
R21	470Ω	½		BTS-470	
R22	22KΩ	½		BTS-22K	
R23	22KΩ	½		BTS-22K	
R24	47KΩ 5%	½		BTS-47K 5%	
R25	4700Ω 5%	½		BTS-4700 5%	
R26	47KΩ	½		BTS-47K	
R27	1500Ω 5%	½		BTS-1500 5%	
R28	390KΩ 5%	½		BTS-390K 5%	
R29	150KΩ	½		BTS-150K	
R30	220KΩ 5%	½		BTS-220K 5%	
R31	220KΩ 5%	½		BTS-220K 5%	
R32	220KΩ 5%	½		BTS-220K 5%	
R33	1Meg 5%	½		BTS-1Meg 5%	
R34	1200Ω 5%	½		BTS-1200 5%	
R35	680KΩ	½		BTS-680K	
R36	150KΩ	½		BTS-150K	
R37	470KΩ	½		BTS-470K	
R38	330Ω	½		BTS-330	
R39	22KΩ	½		BTS-22K	
R40	5600Ω	1		BTA-5600	
R41	6800Ω	1		BTA-6800	
R42A	56KΩ	½		BTS-47K	*
B	50KΩ	½		BTS-47K	
R43	3300Ω 5%	½		BTS-3300 5%	
R44	10KΩ 5%	½		BTS-10K 5%	
R45	220KΩ	½		BTS-220K	
R46	8200Ω	½		BTS-8200	
R47	1Meg	½		BTS-1Meg	
R48	4700Ω	½		BTS-4700	
R49	100KΩ	½		BTS-100K	
R50	100KΩ	½		BTS-100K	
R51	180Ω	½		BTS-180	
R52	150KΩ	½		BTS-150K	
R53	1000Ω	½		BTS-1000	
R54	150KΩ	½		BTS-150K	
R55	1000Ω	½		BTS-1000	
R56	350Ω	10		PW10-350	
R57	27KΩ	½		BTS-27K	
R58	100Ω	7		PW7-100	

* Items 42A, 42B, C28A, C28B, C28C, C28D and loudness control are combined in one unit.

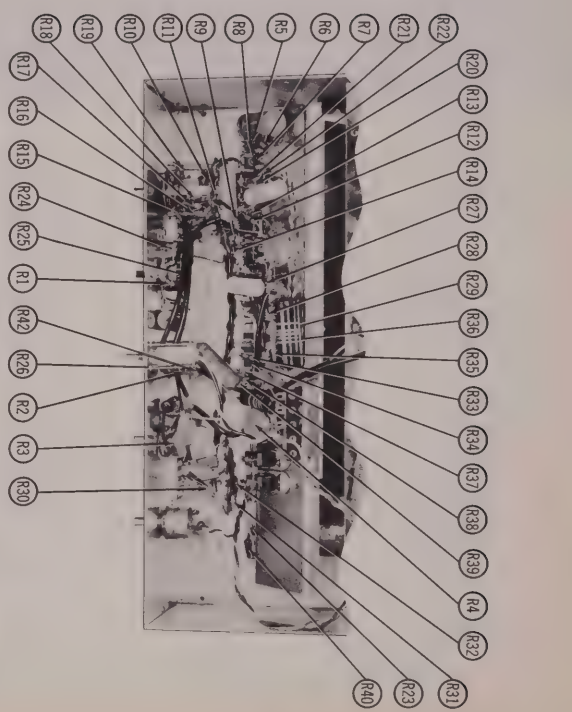
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SEC. 3	CRAFTSMEN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117VAC @ 60A	740VCT .120ADC	5VAC @ 2A	6.3VAC 3.3A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CRAFTSMEN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6.4KΩ CT Tap @ 220Ω CT	16Ω Tap @ 8Ω							

CHASSIS—BOTTOM VIEW



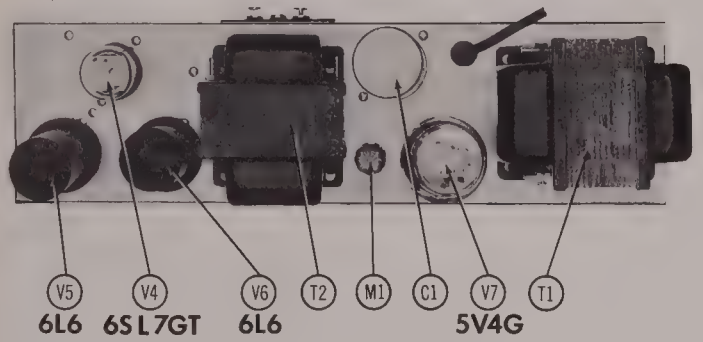
PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

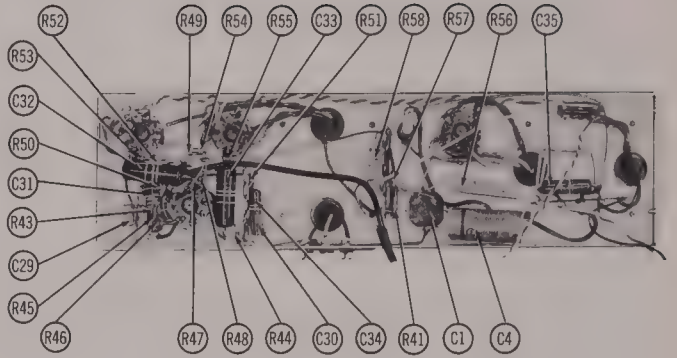
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CRAFTSMEN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	1¼A 125V			31301.5 (3AG S/B 1¼A)	342008	MDL 1¼	HKP

MISCELLANEOUS

ITEM No.	PART NAME	CRAFTSMEN PART No.	NOTES
M2	Pilot Light		#51
M3	Switch		Selector & Phono Compensation (Rotary-Wafer Type)
M4	Switch		Low Filter (3 Position-Slide Type)
M5	Switch		High Filter (3 Position-Slide Type)
M6	Switch	606023	Power (On-Off)

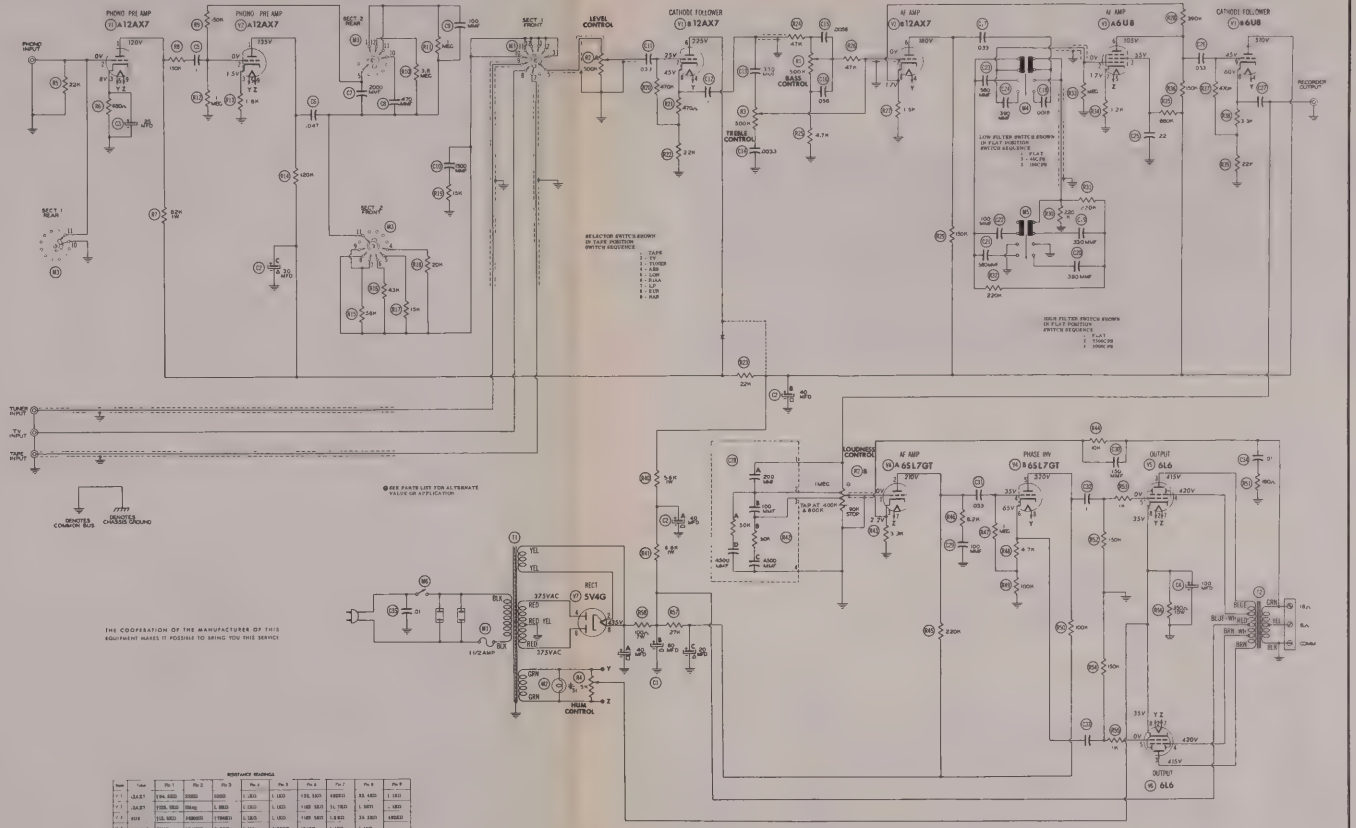


POWER CH. TOP VIEW



POWER CH. BOTTOM VIEW

DENVER, COLORADO



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Tube	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V-1	12AX7	79K, 68Ω	68Ω	68Ω	1.2K Ω	1.2K Ω	135, 160Ω	68Ω	33, 42Ω	1.2K Ω
V-2	12AX7	100K, 180Ω	68Ω	1.8KΩ	1.2K Ω	1.2K Ω	1.4KΩ	1.7KΩ	1.5KΩ	1.2K Ω
V-3	6U8	110, 68Ω	190KΩ	170KΩ	1.2K Ω	1.2K Ω	1.4K Ω	1.8KΩ	35, 38Ω	68KΩ
V-4	6BL7GT	750Ω	1.2K Ω	1.2K Ω	1.2Meg	1.2K Ω	1.2K Ω	1.2K Ω	1.2K Ω	
V-5	6L6	TP	1.2K Ω	170Ω	130Ω	1.2K Ω	TP	1.2K Ω	330Ω	
V-6	6L6	TP	1.2K Ω	170Ω	130Ω	1.2K Ω	TP	1.2K Ω	330Ω	
V-7	5V4G	NC	300KΩ	NC	300	NC	300	NC	190KΩ	

ALL MEASUREMENTS WITH SELECTOR SWITCH IN PULL LOUDNESS POSITION
AC 117V. MEASURED ACROSS FILAMENT
UNBALANCED FROM PIN 2 OR 7
SLOW FILTER SWITCH IN FLAT POSITION
TP-TIE POINT
NC-NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter, unless otherwise indicated at 1000 ohms per volt
2. Socket capacitance and shorts as factory views
3. Measured values are from socket pin to chassis ground
4. Line voltage adjustment at 117 volts
5. Nominal tolerance of components is ±10% unless otherwise
6. Nominal tolerance of resistance readings
7. All controls at minimum, proper output level measured

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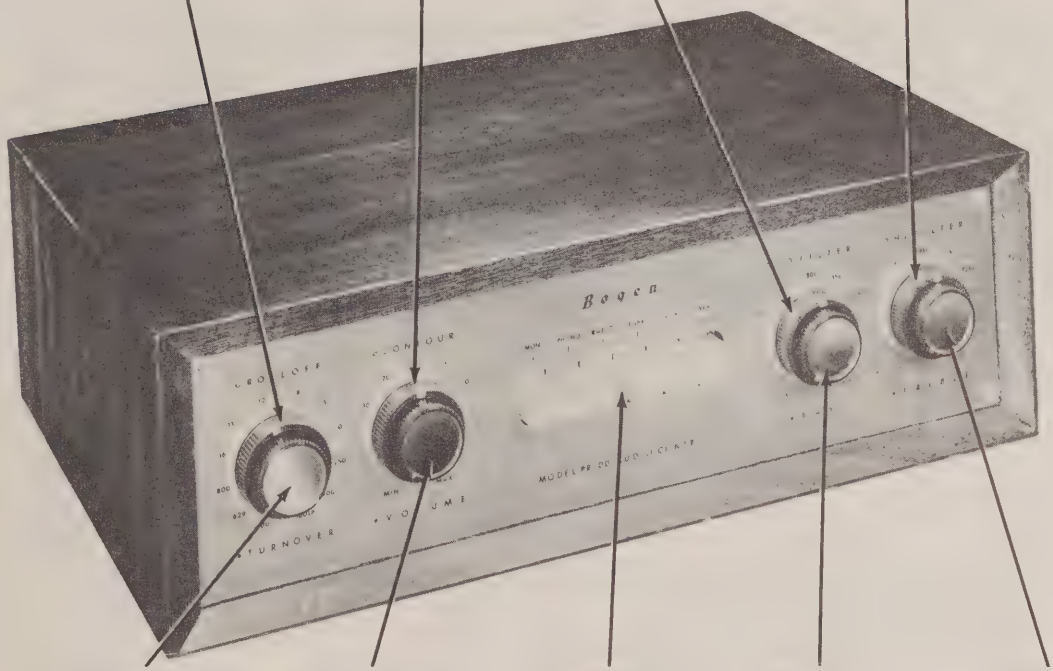
DAVID BOGEN
PR100



DAVID BOGEN
PR100

TRADE NAME	David Bogen Model PR100
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N. Y.
TYPE SET	AC Operated Six Channel Equalizer-Control Amplifier
TUBES (Five)	Types (2) 12AV7 Preamp., 12AT7 AF Amp., 12AT7 AF Amp., 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.23 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		David Bogen PART No.	STANDARD REPLACEMENT		
V1	Preamp.	12AV7	12AV7	9A	
V2	Preamp.	12AV7	12AV7	9A	
V3	AF Amp.	12AT7	12AT7	9A	
V4	AF Amp.	12AT7	12AT7	9A	
V5	Rectifier	6X4	6X4	5BS	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	David Bogen PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	▲20	450		FP376. 5	TM-T20-450	T-140	
B	▲20	450					
C2	2000	15			TD-1000-15 TD-1000-15	S-025	
C3A	▲20	450		FP376. 5	TM-T20-450	T-140	
B	▲20	450					
C4	100	6		TC2501	TD-100-6	MTH-0610	
C5	100	6		TC2501	TD-100-6	MTH-0610	

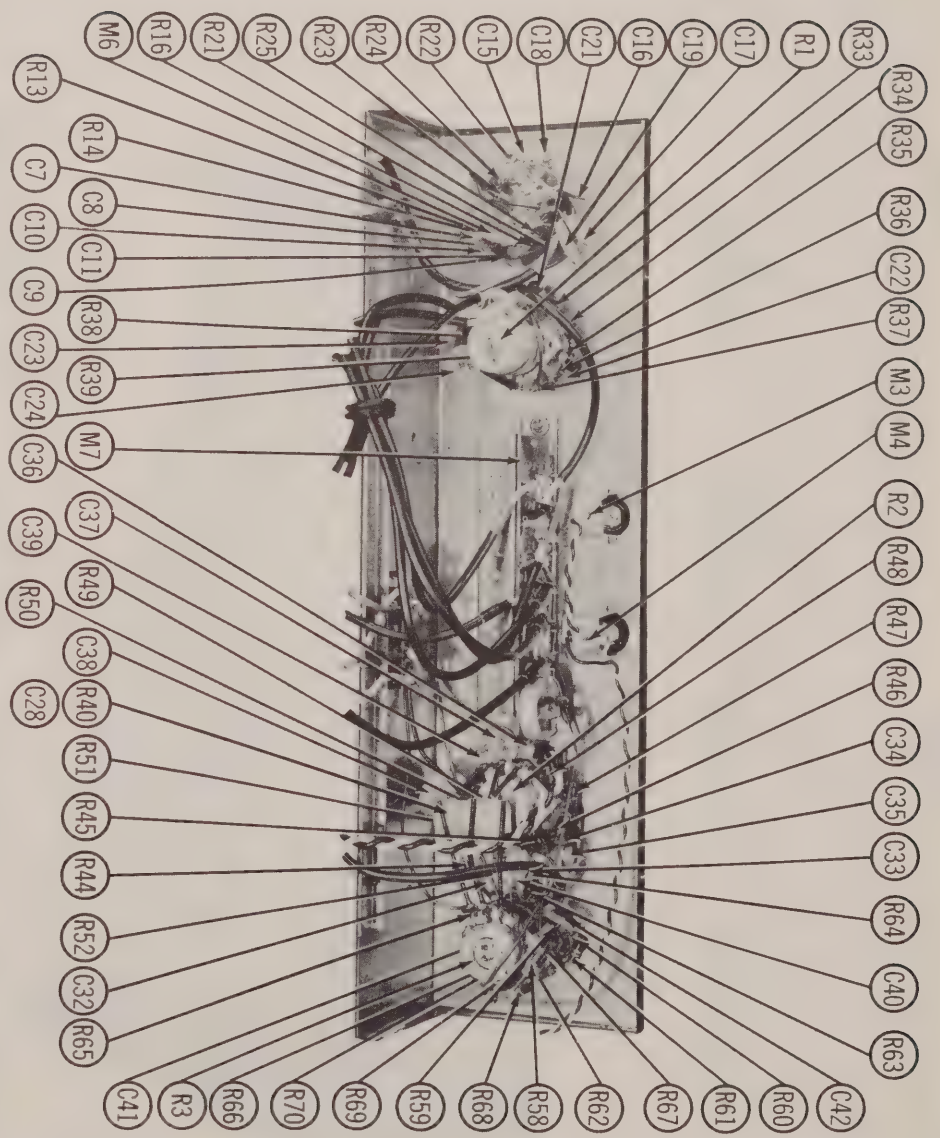
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	David Bogen PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	
C6	.033	400		DF-303		PT4133	
C7	1000				811-102		
C8	750				811-751		
C9	620						
C10	390			D6-391	811-391		
C11	220			D6-221	811-221		
C12	.1	200		DF-104		PT401	
C13	.047	400		DF-503		PT4147	
C14	.047	200		DF-503		PT4147	
C15	2200						
C16	1200				811-122		
C17	2200						
C18	390			D6-391	811-391		
C19	3900						
C20	.47	400				PT4047	
C21	47			DD-470	831-470	ZT-5447	
C22	150			DD-150	811-151	ZT-5315	
C23	4700						
C24	2200						
C25	47			DD-470	831-470	ZT-5447	
C26	.022	200		DF-203	817-02	PT4122	
C27	.1	400		DF-104		PT401	
C28A	100		♦	DD-101	801-101	801-101	
B	4700		♦	DD-472	811-0047	811-0047	
C	4700		♦	DD-472	811-0047	811-0047	
C29	.1	400		DF-104		PT401	
C30	18			D6-180	831-180		
C31	.22	400				PT4022	
C32	4700						
C33	10000			DD-103	811-01	DC511	
C34	.022	200		DF-203	817-02	PT4122	
C35	.047	200		DF-503		PT4147	
C36	1000				811-102		
C37	2200						
C38	4700						
C39	10000				811-01	DC511	
C40	750				811-751		
C41	150			DD-151	811-151	ZT-5315	
C42	10000			DD-103	811-01	DC511	
C43	.022	400		DF-203	817-02	PT4122	
C44	.1	400		DF-104		PT601	

♦ Items C28A, C28B, C28C, R40A, R40B, and R40C are combined in one unit.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	Switch		S423C					Contour (Panel)
B	500KΩ	½						Volume(Rear)
C	5D0KΩ	½						Volume
R2A	Switch		S434B					Lo Filter (Panel)
B	1Meg	½						Bass (Rear)
R3A	Switch		S425B					Hi Filter (Panel)
B	500KΩ	½						Treble (Rear) (Tap at 300KΩ)
R4A	500KΩ	½	V275A	Q13-132	A47-500K-Z	AB-50	U-42	Auxiliary ADJ
B	Shaft		Not Req.	Not Req.	FES-1/4	AK-1	Not Req.	Attach to R4A.
R5A	500KΩ	½	V276A	Q13-133	A47-500K-Z	AB-50	U-42	Tuner ADJ
B	Shaft		Not Req.	Not Req.	FES-1/4	AK-1	Not Req.	Attach to R5A.
R6A	500KΩ	½	V276A	Q13-133	A47-500K-Z	AB-50	U-42	Tape ADJ
B	Shaft		Not Req.	Not Req.	FES-1/4	AK-1	Not Req.	Attach to R6A.

RESISTORS

ITEM No.	RATING OHMS	RATING WATTS	REPLACEMENT DATA David Bogen PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R7	22KΩ	½		BTS-22K	
R8	47KΩ	½		BTS-47K	
R9	33KΩ	½		BTS-33K	
R10	2000Ω 1%	½		MEC-2000 1%	
R11	6200Ω 1%	½		MEC-620 1%	
R12	1500Ω 1%	½		MEC-1500 1%	
R13	51KΩ 5%	½		BTS-51K 5%	
R14	33KΩ	½		BTS-33K	
R15	100KΩ 5%	½		BTS-100K 5%	
R16	100KΩ 5%	½		BTS-100K 5%	
R17	470KΩ	½		BTS-470K	
R18	3. 3Meg	1		BTA-3. 3Meg	
R19	100KΩ	1		BTA-100K	
R20	470KΩ	½		BTS-470K	
R21	1. 2Meg	½		BTS-1. 2Meg	
R22	22Meg	½		BTS-22Meg	
R23	22Meg	½		BTS-22Meg	
R24	22Meg	½		BTS-22Meg	
R25	22Meg	½		BTS-22Meg	
R26	100KΩ	½		BTS-100K	
R27	820KΩ	½		BTS-820K	
R28	470KΩ	½		BTS-470K	
R29	100KΩ	½		BTS-100K	
R30	47KΩ	1		BTA-47K	
R31	100KΩ	1		BTA-100K	
R32	1800Ω	1		BTA-1800	
R33	100KΩ	½		BTS-100K	
R34	100KΩ	½		BTS-100K	
R35	100KΩ	½		BTS-100K	
R36	220KΩ	½		BTS-220K	
R37	47KΩ	½		BTS-47K	
R38	270KΩ	½		BTS-270K	
R39	47KΩ	½		BTS-47K	
R40A	470KΩ	½		BTS-470K	
B	100KΩ	½		BTS-100K	
C	100KΩ	½		BTS-100K	

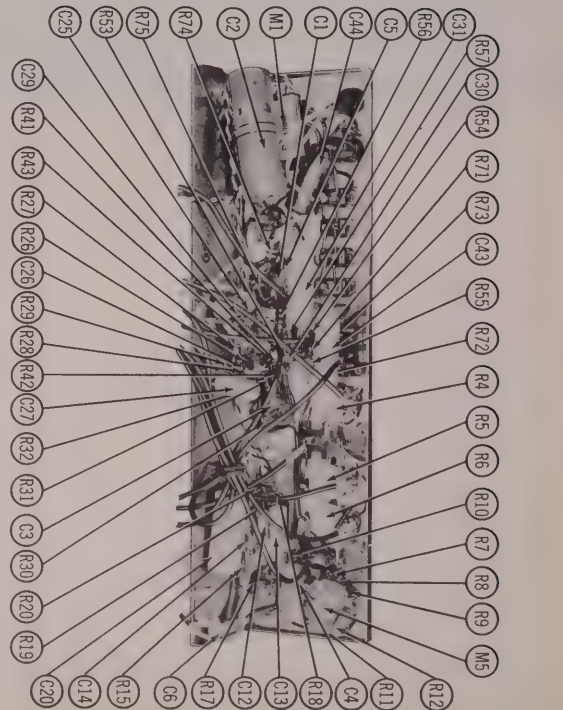
ITEM No.	RATING OHMS	RATING WATTS	REPLACEMENT DATA David Bogen PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R41	10KΩ	1		BTA-10K	
R42	100KΩ	1		BTA-100K	
R43	2200Ω	1		BTA-2200	
R44	100KΩ	½		BTS-100K	
R45	22Meg	½		BTS-22Meg	
R46	22Meg	½		BTS-22Meg	
R47	22Meg	½		BTS-22Meg	
R48	22Meg	½		BTS-22Meg	
R49	22Meg	½		BTS-22Meg	
R50	22Meg	½		BTS-22Meg	
R51	22Meg	½		BTS-22Meg	
R52	22Meg	½		BTS-22Meg	
R53	220KΩ	½		BTS-220K	
R54	390KΩ	½		BTS-390K	
R55	56KΩ	½		BTS-56K	
R56	47KΩ	1		BTA-47K	
R57	1200Ω	1		BTA-1200	
R58	470KΩ	½		BTS-470K	
R59	6800Ω	½		BTS-6800	
R60	4700Ω	½		BTS-4700	
R61	15KΩ	½		BTS-15K	
R62	47KΩ	½		BTS-47K	
R63	330KΩ	½		BTS-330K	
R64	180KΩ	½		BTS-180K	
R65	120KΩ	½		BTS-120K	
R66	100KΩ	½		BTS-100K	
R67	470KΩ	½		BTS-470K	
R68	560KΩ	½		BTS-560K	
R69	750KΩ 5%	½		BTS-750K 5%	
R70	1. 5Meg	½		BTS-1. 5Meg	
R71	1Meg	½		BTS-1Meg	
R72	2200Ω	2		BTS-2200	
R73	47KΩ	2		BTS-47K	
R74	150KΩ	2		BTS-150K	
R75	10KΩ	2		BTS-10K	

♦ Items C28A, C28B, C28C, R40A, R40B, R40C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA David Bogen PART No.	Hallidorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @. 23A	620VCT .01ADC	12VAC .720ADC	6. 3VAC @. 86A	T3133					

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	David Bogen PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.720ADC	H-432	1017	C1B			604B	

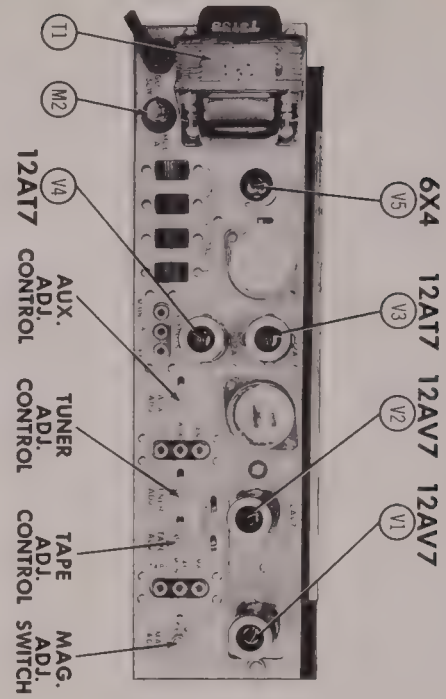
FUSES

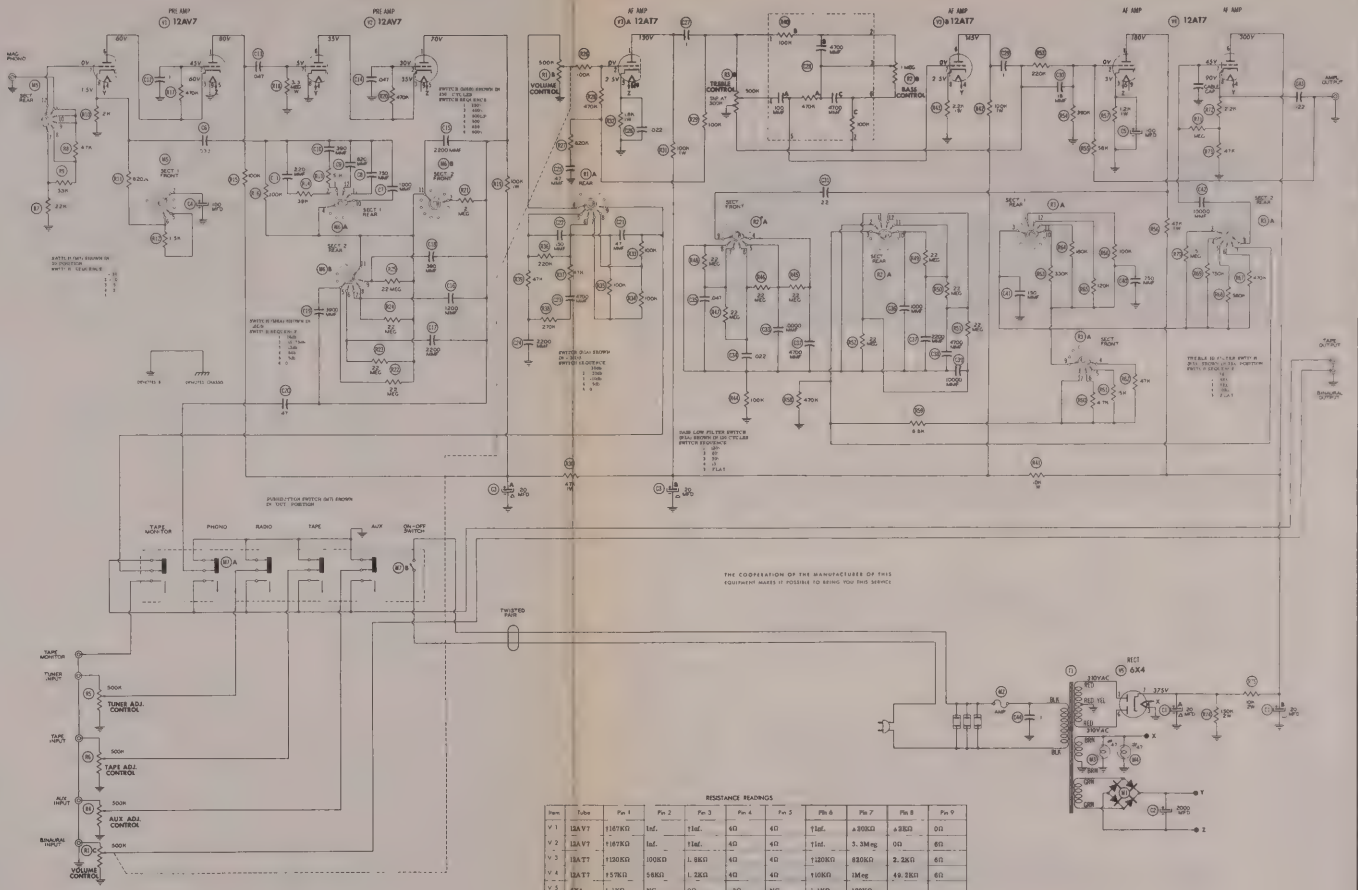
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG S/B	1A 250V			313001. (3AG S/B 1A)	342001	MDL1	HKP

MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M3	Pilot Light		#47
M4	Pilot Light		#47
M5	Switch	S433C	Magnetic Adjust (Rotary-Wafer Type)
M6A	Switch	S422A	Record Equalization-Rolloff (Rotary-Wafer Type)
B	Switch		Record Equalization-Turnover (Rotary-Wafer Type)
M7A	Switch	S426C	Input Selector Assy.-Pushbutton, Slide Type
B	Switch		Off (Power)-Pushbutton, Slide Type

CHASSIS—REAR VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AV7	†167KΩ	Inf.	†Inf.	4Ω	4Ω	†Inf.	▲30KΩ	▲3KΩ	0Ω
V 2	12AV7	†167KΩ	Inf.	†Inf.	4Ω	4Ω	†Inf.	3.3Meg	0Ω	6Ω
V 3	12AT7	†120KΩ	100KΩ	1.8KΩ	4Ω	4Ω	†120KΩ	820KΩ	2.2KΩ	6Ω
V 4	12AT7	†57KΩ	56KΩ	1.2KΩ	4Ω	4Ω	†10KΩ	1Meg	49.2KΩ	6Ω
V 5	6X4	1.1KΩ	NC	0Ω	3Ω	NC	1.1KΩ	170KΩ		

▲MAG. ADJ. SWITCH IN POSITION "30".
†MEASURED FROM PIN 7 OF V5.
NC-NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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EMERSON MODELS 1108D, 1109D, 1110D, 1111D, 1112D, 1113D, 1116D, 1117D, 1120D, 1121D, 1122D, 1123D, 1124D, 1125D, 1126D, 1127D (Ch. 120257-D, 120258-D, 120263-D, 120265-D)

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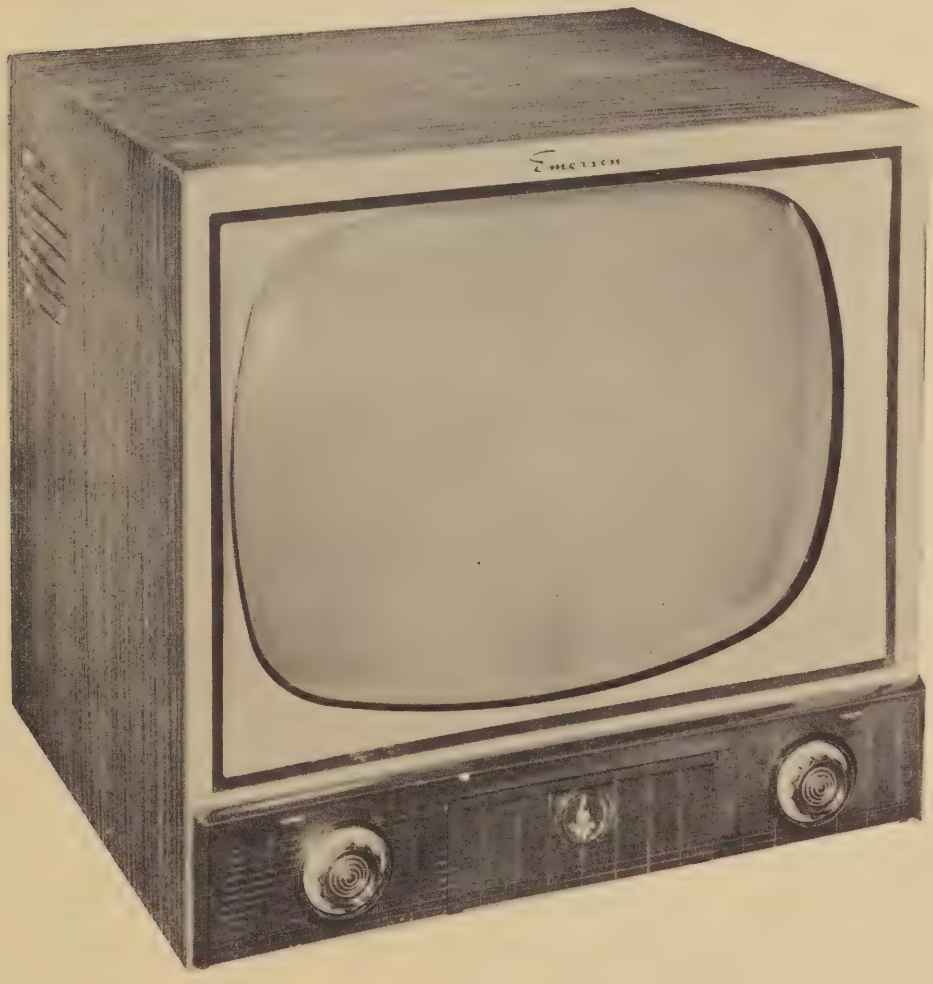

MODEL 1108D

EMERSON MODELS 1108D, 1109D, 1110D, 1111D, 1112D, 1113D, 1116D, 1117D, 1120D, 1121D, 1122D, 1123D, 1124D, 1125D, 1126D, 1127D (Ch. 120257-D, 120258-D, 120263-D, 120265-D)

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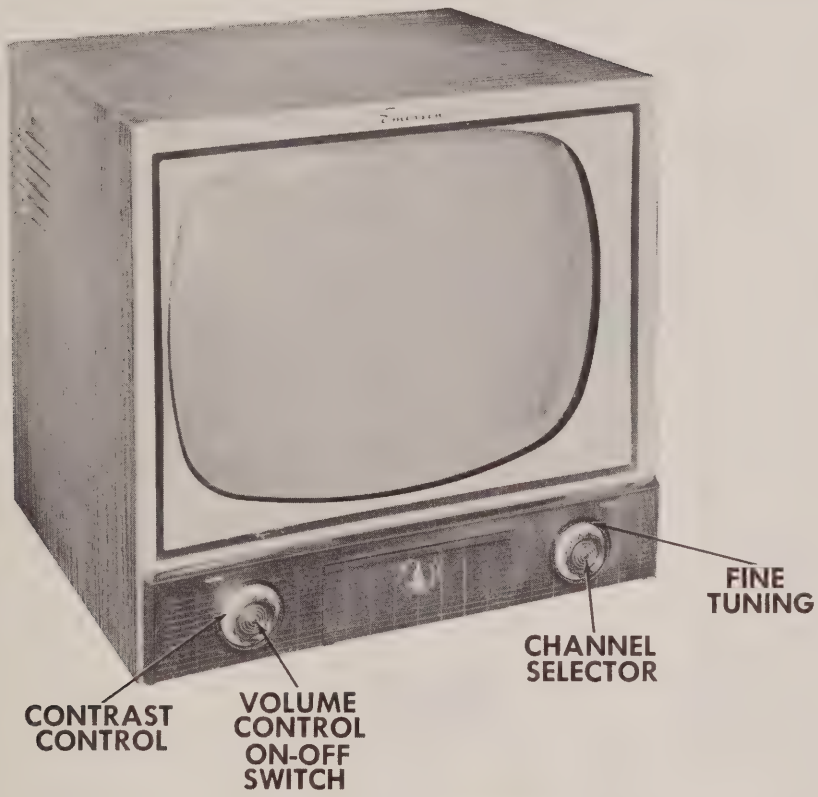

EMERSON MODEL 1108D

TRADE NAME	Emerson	MODELS	CHASSIS	TUNER
		1108D, 1110D, 1112D, 1116D, 1120D, 1126D	120257-D	470802 (VHF)
		1109D, 1111D, 1113D, 1117D, 1121D, 1127D	120258-D	470800 (UHF-VHF)
		1122D, 1124D	120263-D	470802 (VHF)
		1123D, 1125D	120265-D	470800 (UHF-VHF)

MANUFACTURER	Emerson Radio & Phono Corp., 111 8th. Ave., New York, N.Y.
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.42 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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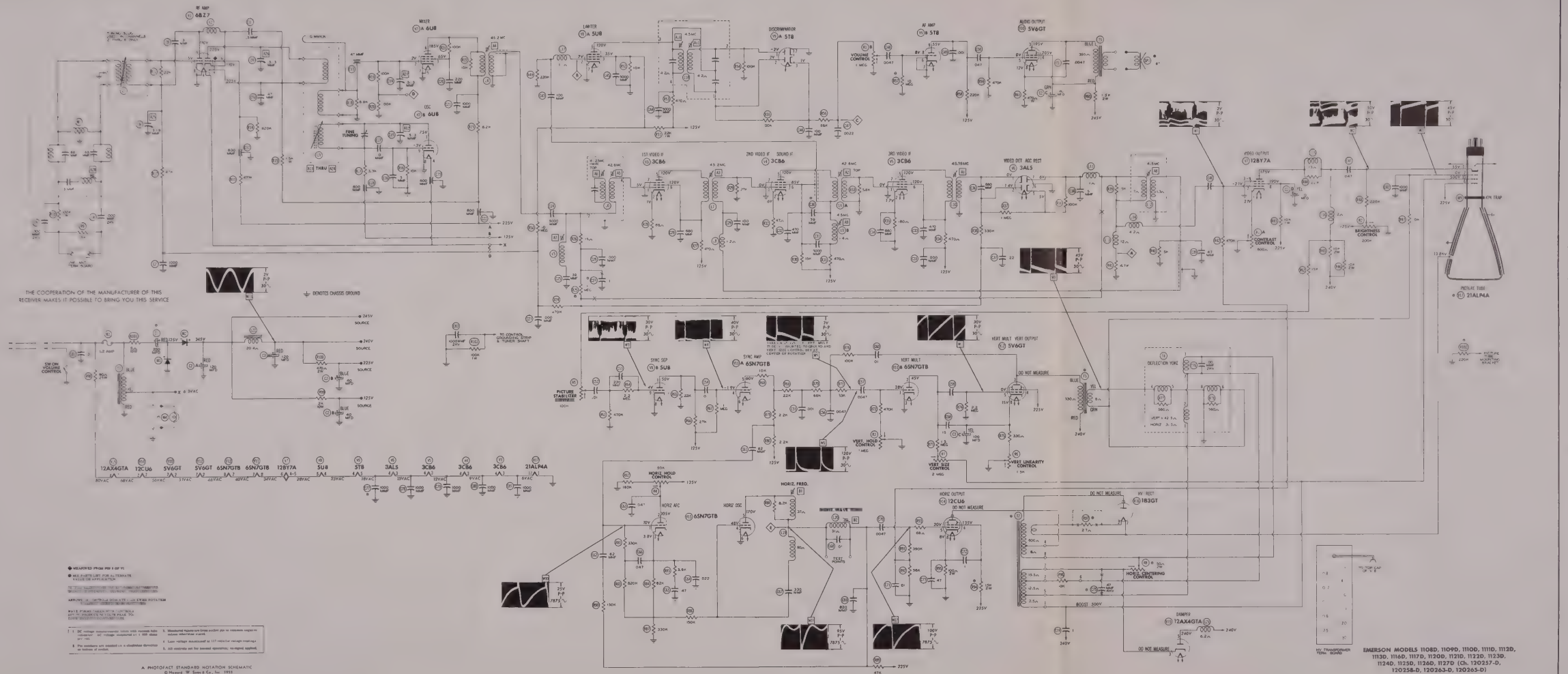
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
12AX4GTA 12CU6 5V6GT 5V6GT 6SN7GTB 6SN7GTB 12BY7A 5U8 5T8 3AL5 3CB6 3CB6 3CB6 21AL P4A
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CHASSIS TOP VIEW

EMERSON MODELS 1108D, 1109D, 1110D, 1111D, 1112D, 1113D, 1116D, 1117D, 1120D, 1121D, 1122D, 1123D, 1124D, 1125D, 1126D, 1127D (Ch. 120257-D, 120258-D, 120263-D 120265-D)

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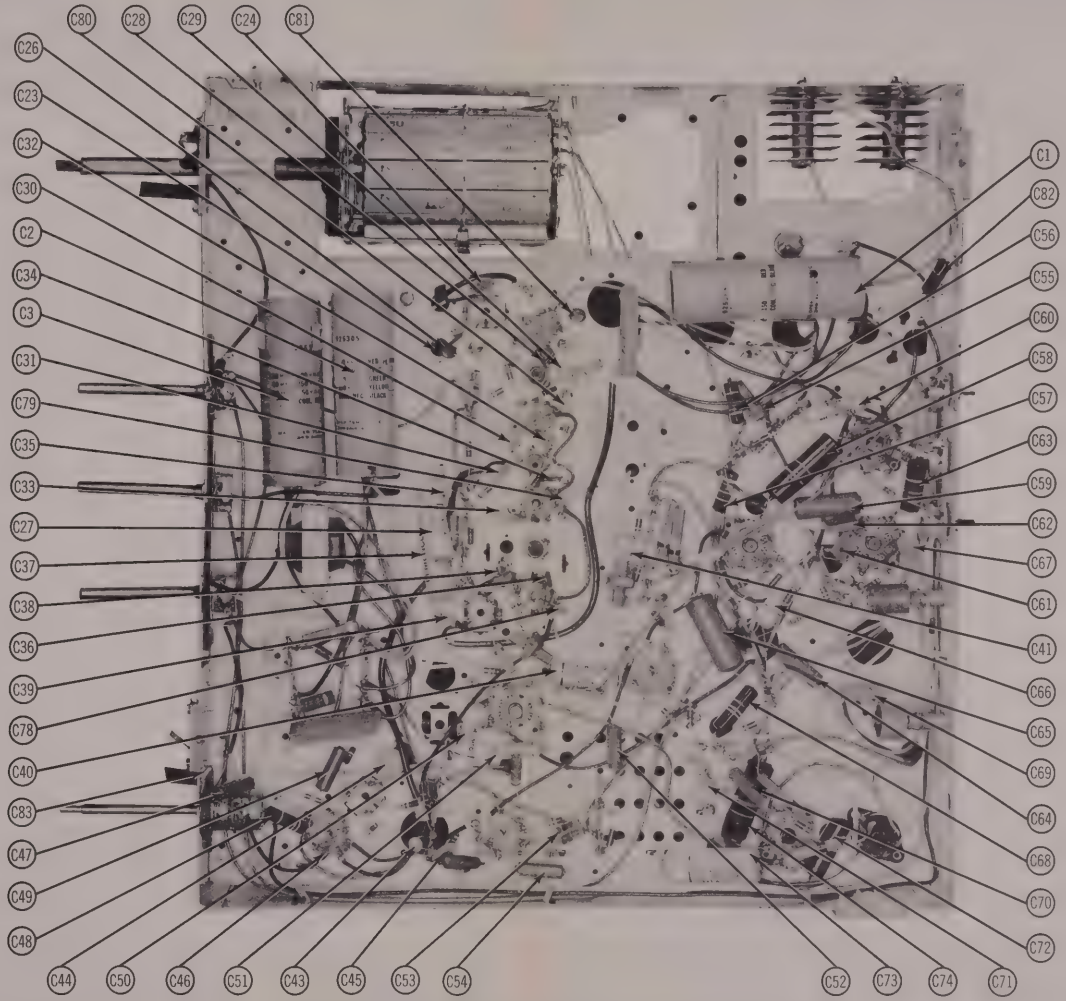

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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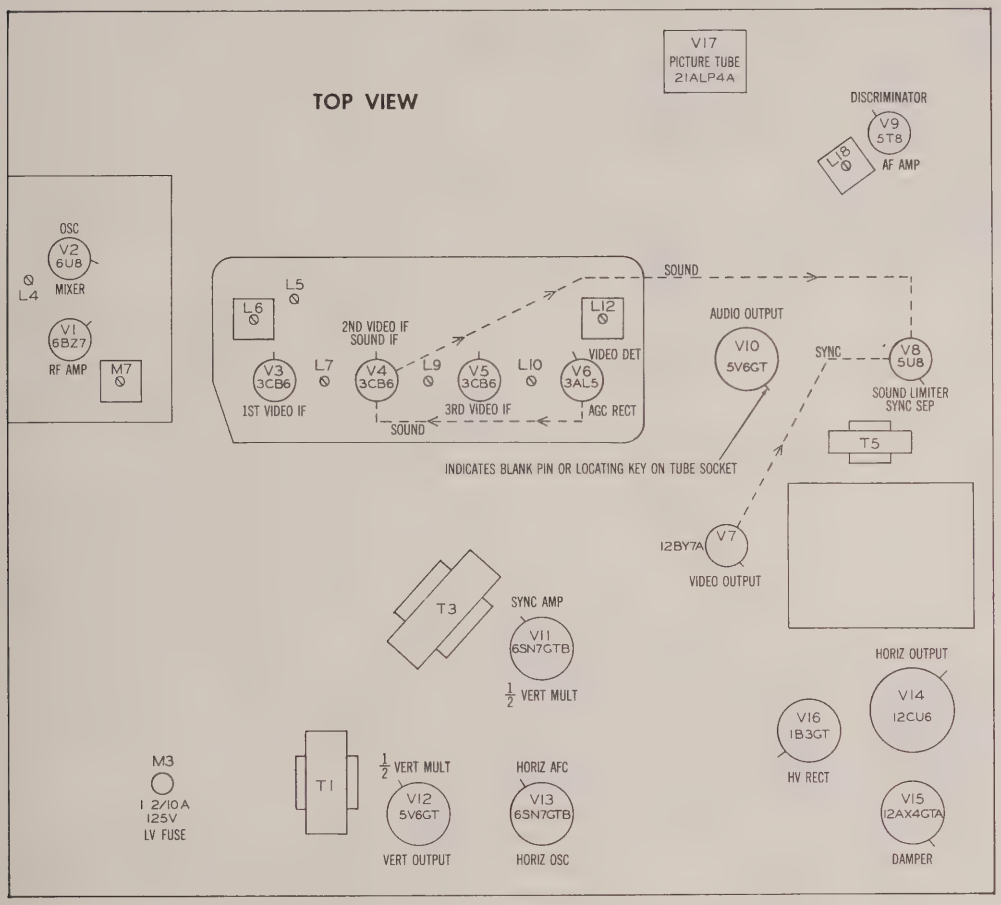
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

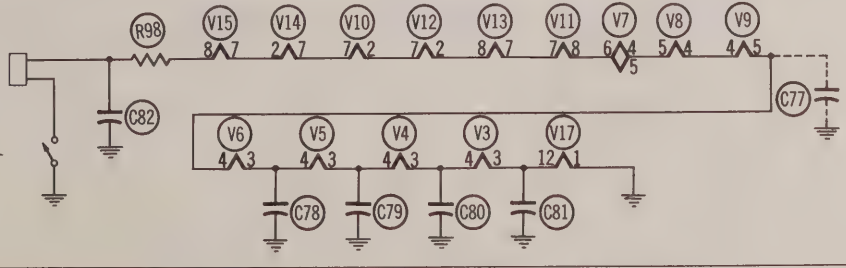
POWER SUPPLY FAILURE
No raster, no sound -Selenium Rectifiers (M1 & M2) Fuse (M3)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster -V5, V6, V7, V17
Has pic, no sound - V8, V9, V10

SYNC FAILURE
No vert. sync -V11, V12
No horiz. sync - V11, V13
No vert. or horiz. sync - V8, V11

SWEEP FAILURE
No raster, has sound -V13, V14, V15, V16, V17
No vertical deflection - V11, V12
Poor vert. linearity or foldover - V11, V12
Poor horiz. linearity or foldover -V13, V14, V15
Narrow picture -V13, V14, V15, V16, M1, M2
Vert. off freq. - V11, V12
Horiz. off freq. - V11, V13

Note: Since this receiver employs tubes used in a series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below.)



EMERSON MODELS 1108D, 1109D, 1110D, 1111D, 1112D, 1113D, 1116D, 1117D, 1120D, 1121D, 1122D, 1123D, 1124D, 1125D, 1126D, 1127D (Ch. 120257-D, 120258-D, 120263-D 120265-D)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
Picture tube may be removed from chassis for easier slug adjustments. The high voltage lead should be securely taped and kept away from chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C37. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube. Low side to chassis.	Not used	45.75MC (Unmod.)	10 or 12	Use VTVM DC probe to point (A). Common side to chassis.	A1	Attenuate generator output for not more than -2 volts at VTVM. Adjust for maximum deflection.
2.	"	"	"	42.6MC	"	"	A2, A5	"
3.	"	"	"	45.2MC	"	"	A3, A4	"
4.	"	"	"	41.25MC	"	"	A6	Increase generator output for desirable reading and adjust A6 for MINIMUM deflection.
5.	"	"	"	47.25MC (400~ Mod.)	"	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A7	Adjust for MINIMUM 400Ω indication on scope. Use high scope gain and increase generator output.
6.	"	"	44MC (10MC Swp.)	41.25MC 45.75MC 47.25MC	"	"		Use only enough sweep generator output to produce useable pattern on scope. Check for response curve similar to Fig. 1. If necessary SLIGHTLY retouch A1 thru A5 to obtain desired response. If Videomarker (45.75MC) is too high, readjust A1. If too low, readjust A3. Increase sweep generator and scope output to observe 41.25 and 45.75MC Trap markers. If necessary, retouch A6 for 41.25MC and A7 for 47.25MC Trap markers.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Short pin 1 (grid) of 3CB6 (V3) to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 7 plate of 3AL5 (V6). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru 10KΩ to point (B). Common to chassis.	A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe thru 10KΩ to point (C). Common to chassis.	A10, A11	Detune A11 for maximum negative deflection. Adjust A10 for maximum deflection. Readjust A-11 for zero reading on VTVM. A positive and negative reading will be obtained on either side of the correct setting. Remove short from pin 1 of V3.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Short pin 1 (grid) of 3CB6 (V3) to chassis.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (grid) of 3AL5 (V6). Low side to chassis.	4.5MC (450KC Swp.)	4.5MC	Any	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A8, A9	Adjust for curve of maximum amplitude and symmetry, similar to Fig. 2.
8.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (C). Low side to chassis.	A10, A11	Adjust A10 for maximum amplitude and straightness of crossover lines as in Fig. 3. Adjust A-11 so that 4.5MC occurs at center of crossover lines. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines. Remove short from pin 1 of V3.

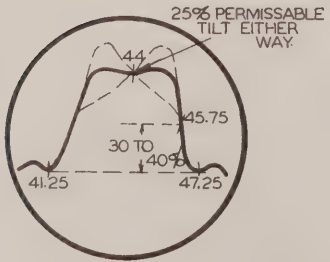


FIG. 1

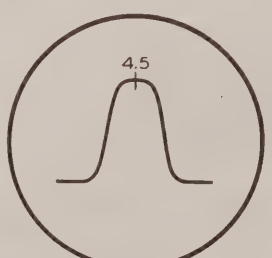


FIG. 2

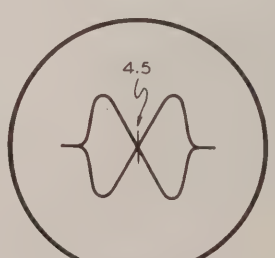


FIG. 3

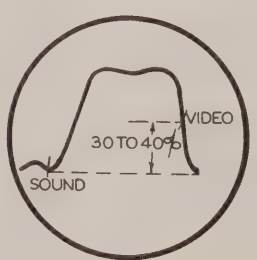


FIG. 4

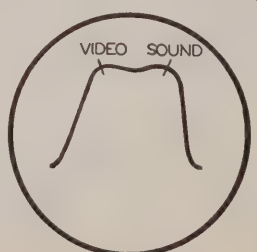


FIG. 5

PROPERTY OF
L. F. DILLMAN ENTERPRISES
3334 MEADE ST.
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A12. It should be noted that A12 is an all channel oscillator circuit adjustment and should not be used to correct any one channel. If A12 will not bring in all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel oscillator screws are reached through a hole just above and slightly to the left of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each VHF channel. Connect bias as under "Video IF Alignment."
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp.)	205. 25MC 209. 75MC	12	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A13	Advance gain so that the sound notch is visible on response curve. Adjust to place sound marker in trap notch. Video marker should fall at 30 to 40% of maximum on opposite slope of response curve as shown in Fig. 4.
			213MC (10MC Swp.)	211. 25MC 215. 75MC	13		A14	
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11		A15	
			195MC (10MC Swp.)	193. 25MC 197. 75MC	10		A16	
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9		A17	
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8		A18	
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7		A19	
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6		A20	
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5		A21	
			69MC (10MC Swp.)	67. 25MC 71. 75MC	4		A22	
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3		A23	
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2		A24	

VHF RF AND MIXER ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp.)	205. 25MC 209. 75MC	12	Vert. Amp. thru 10KΩ to point (D). Low side to chassis.	A25 A26 A27	Adjust marker generator to provide useable marker, be sure it does not distort the response curve. Adjust for response, similar to Fig. 5.
11.	"	"	213MC (10MC Swp.)	211. 25MC 215. 75MC	13	"		Check for response similar to Fig. 5 on all channels. If markers fall below 70% on any channel make compromise adjustments of A25, A26 and A27 with channel switch set to that channel. Then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp.)	199. 25MC 203. 75MC	11			
			195MC (10MC Swp.)	193. 25MC 197. 75MC	10			
			189MC (10MC Swp.)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp.)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp.)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp.)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp.)	77. 25MC 81. 75MC	5			
			69MC (10MC Swp.)	67. 25MC 71. 75MC	4			
			63MC (10MC Swp.)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp.)	55. 25MC 59. 75MC	2			

IF WAVE TRAP ADJUSTMENT

The IF wave trap should be tuned to minimize interferance caused by signals which fall within the video IF band-pass (40-48MC). Tune in a station on which the interferance is noted and adjust A28 for minimum interference in the picture.

UHF OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across UHF antenna terminals with 120Ω in each lead.	453MC (12MC Swp.)	451. 25MC (Video)	Tuning plates fully open.	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A29	If separate UHF marker generator is used couple it loosely to sweep generator terminals. Adjust to place video (451. 25MC) marker at the 50% point on response curve.
13.	"	"	869MC (12MC Swp.)	867. 25MC (Video)	80	"	A30	Remove shield from side of UHF tuner. Adjust A30 to place video marker (867. 25MC) at 50% on response curve. Use low marker generator output. Replace UHF tuner shield.

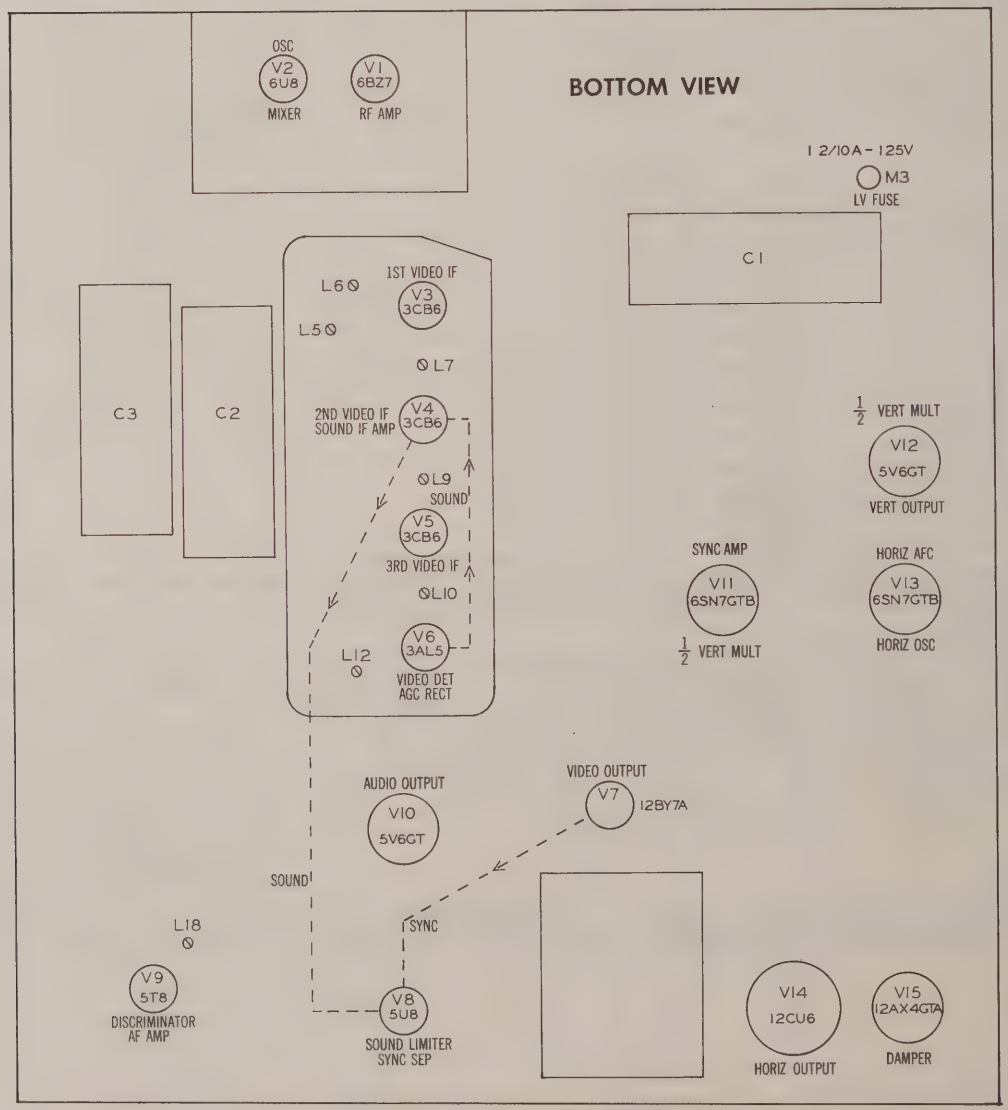
UHF RF ALIGNMENT

The RF portion has been properly aligned at the factory and is very stable. Alignment of this portion is not recommended in the field.

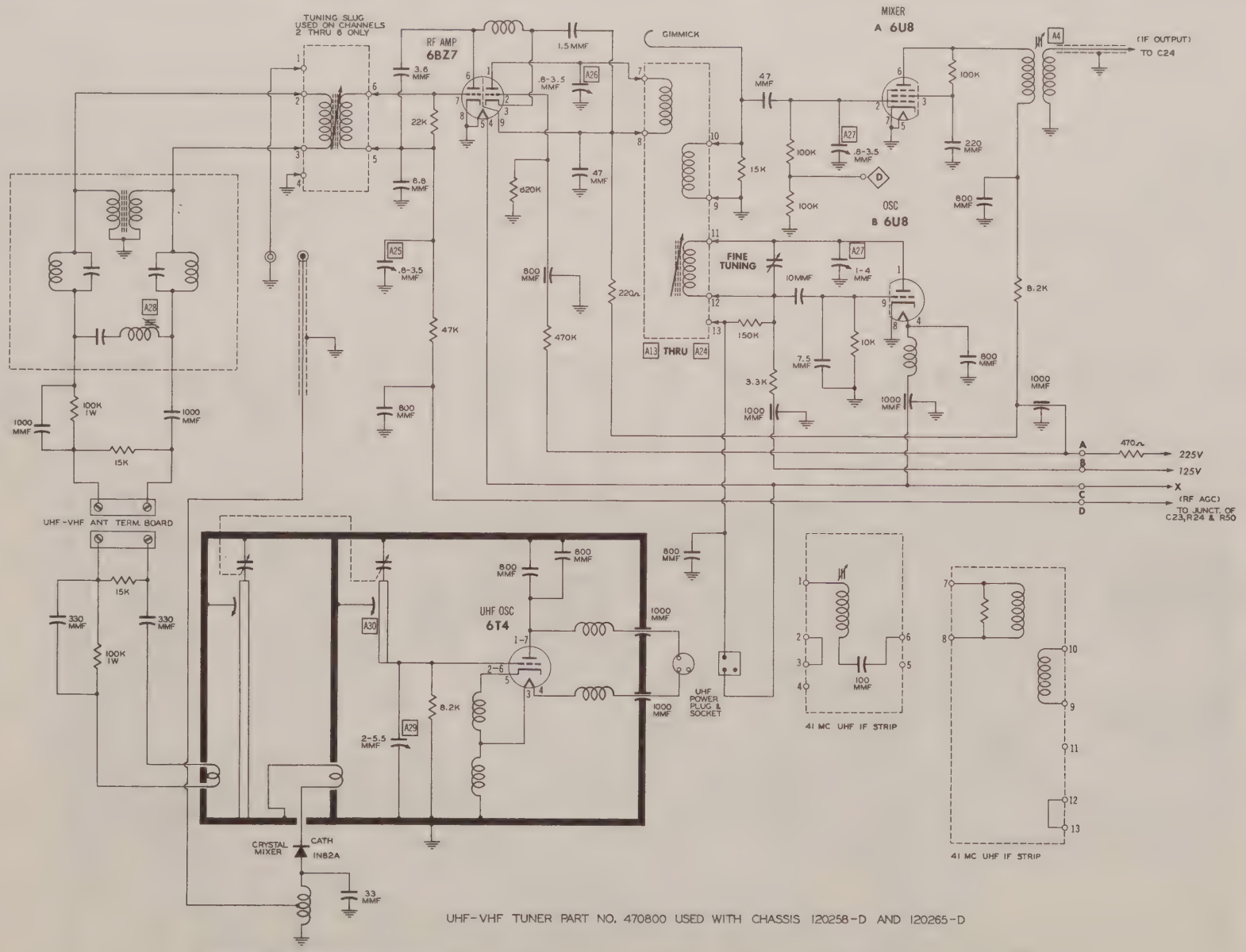
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	†2KΩ	300KΩ	Inf.	0Ω	. 5Ω	Inf.	1. 5Meg	0Ω	†2KΩ
V 2	6U8	†5. 3KΩ	200KΩ	†100KΩ	. 5Ω	0Ω	†8. 7KΩ	0Ω	0Ω	10KΩ
V 3	3CB6	1Meg	68Ω	2Ω	3Ω	†2. 5KΩ	†2. 5KΩ	0Ω		
V 4	3CB6	2. 5Ω	47Ω	3Ω	4Ω	†2. 5KΩ	†17KΩ	0Ω		
V 5	3CB6	0Ω	180Ω	4Ω	5Ω	†2. 5KΩ	†2. 5KΩ	0Ω		
V 6	3AL5	0Ω	1Meg	5Ω	6Ω	100KΩ	0Ω	4. 7KΩ		
V 7	12BY7A	130Ω	500KΩ	0Ω	8Ω	8Ω	9Ω	†5KΩ	†10KΩ	0Ω
V 8	5U8	†18KΩ	220KΩ	†16KΩ	7Ω	8Ω	†2. 5KΩ	0Ω	0Ω	2. 7Meg
V 9	5T8	100KΩ	100KΩ	200KΩ	7Ω	6Ω	0Ω	0Ω	10Meg	†220KΩ
V 10	5V6GT	NC	13Ω	†1. 9KΩ	†1. 5KΩ	470KΩ	TP	14Ω	470Ω	
V 11	6SN7GTB	1. 2Meg	▲2Meg	0Ω	1Meg	†17KΩ	0Ω	10Ω	9Ω	
V 12	5V6GT	TP	12Ω	†350Ω	†500Ω	2. 2Meg	TP	13Ω	650Ω	
V 13	6SN7GTB	1. 5Meg	†25KΩ	400KΩ	500KΩ	†50KΩ	0Ω	10Ω	12Ω	
V 14	12CU6	TP	17Ω	TP	†16KΩ	500KΩ	NC	14Ω	100Ω	TOP CAP ▲36Ω
V 15	12AX4GTA	NC	NC	Inf.	NC	†28Ω	NC	17Ω	19Ω	
V 16	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲636Ω
V 17	21ALP4A	0Ω	10KΩ	PIN 6 †500Ω	PIN 10 ▲20Ω	PIN 11 †300KΩ	PIN 12 2Ω			

†MEASURED FROM OUTPUT OF M2.
▲MEASURED FROM PIN 3 OF V15.
TP-TIE POINT.
NC-NO CONNECTION.



TUBE PLACEMENT CHART



UHF-VHF TUNER PART NO. 470800 USED WITH CHASSIS 120258-D AND 120265-D

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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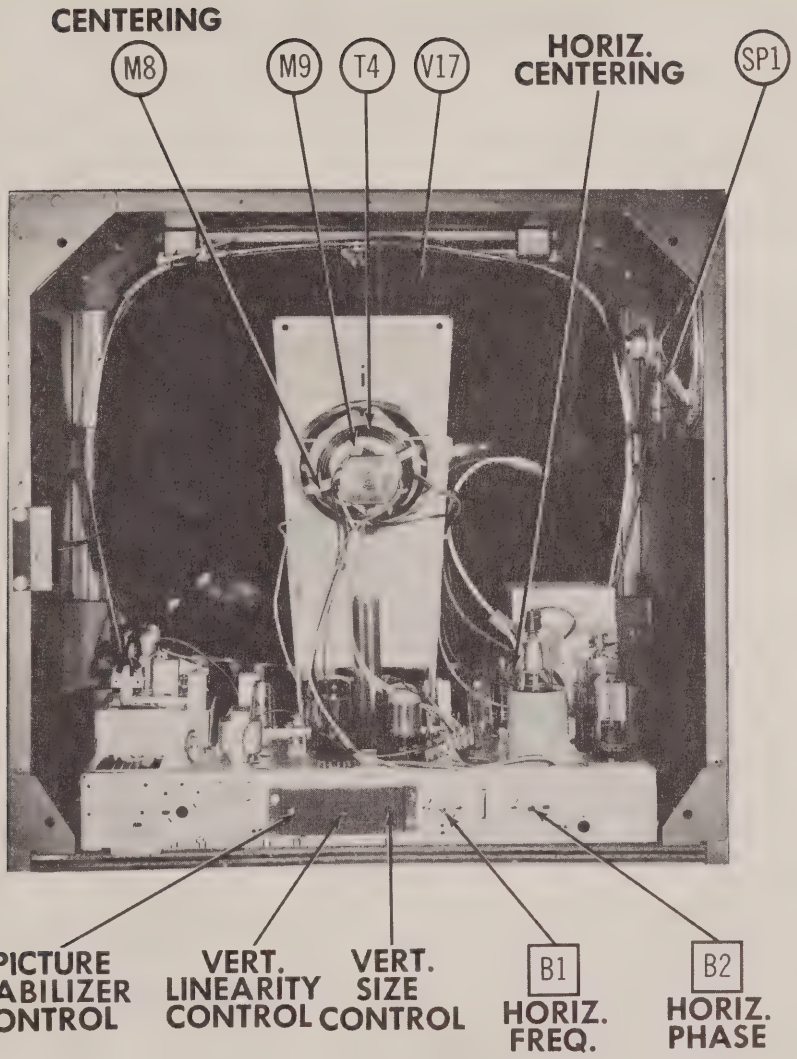
UHF-VHF TUNER SCHEMATIC



PROPERTY OF
L. F. BLANKENSHIP
3884 MEADE ST.
DENVER, COLORADO

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Set the picture stabilizer control (R5) fully clockwise.

Alignment of the horizontal oscillator can be done without removing chassis from cabinet.

① Turn the horizontal hold control maximum clockwise.

② Connect short across L20. Leads are brought to terminal strip on top of chassis (near the rear center) for shorting out L20.

③ Adjust the horizontal frequency slug (B1)to the center of the range over which the picture synchronizes horizontally.

④ Remove short from L20.

⑤ Connect the vertical input lead of an oscilloscope to point Ⓔ. Low side to chassis.

⑥ Adjust the horizontal waveform slug (B2) until the broad and narrow peaks are of equal amplitude as shown in Fig. 6.

⑦ Remove scope from point Ⓔ and chassis. The picture should be in sync and remain in synchronization over the entire range of the horizontal hold control. If unable to obtain correct horizontal hold control range repeat steps 1 thru 7.

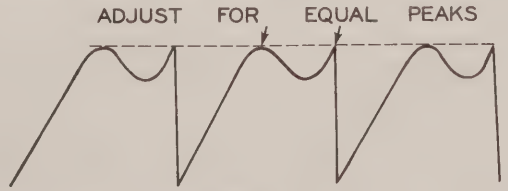


FIG. 6

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V14 and V15. Check M1 and M2. Check C1, C70, C69, R94, R101, T2, T4A and other associated components.

DRIVE LINES

Check by substitution V14 and V15. Check C69, C70, R94, T2, T4A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V14 and V15. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V13, V14 and V15. Check C64, C65, and R85 for open. Check L19, L20, C66, R82 and other associated components.

XMAS TREE EFFECT

Check by substitution V13, V14, V15. Check T2 and T4 for internal arcing. Check L19, L20, C62, C67, C68, C70, R88, R82 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V11 and V12. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R75, C3C and other associated components.	Check C57, C59, R72, R73, R7 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V11 and V12. Check vertical size and vertical linearity controls for proper operation. Check R73, T3 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V11 and V12. Check C59, R73, R7 and other associated components.

COMPRESSED AT TOP

Check by substitution V11 and V12. Check C3C, R75, R6, T3, T4B and other associated components.

FOLDS

Check by substitution V11 and V12. Check C58, C59, R75, R6, T3, T4B and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V8 and V11. Check C52, C53, C54, R66, R67, R79, R80, R68 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V11. Check vertical integrator network. Check C57, C59, R72, R3 and other associated components.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Substitute V13. Check C61, C64, C65, C66, R82, R85 and other associated components.

HORIZONTAL BENDING

Check by substitution V8, V11 and V13. Check components associated with V13.

VIDEO

LOSS OF VIDEO

Substitute V7. Check C40, C41, R43, R45, R46, L16 and other associated components.

SOUND BARS (4.5 MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check video IF alignment.

POOR CONTRAST

Substitute V7. Check contrast control. Check L14, L15, R44, R45, R46, C40, C41 and other associated components.

NEGATIVE PICTURE

Substitute V7. Check picture tube. Check C40, C41, L15, R44 and other associated components.

SMEAR

Substitute V7. Check L11, L13, L14, L15, R44, C40, C41 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5, V6, and V7 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V4, V8, V9 and V10. Check stages V9 and V10 using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF stages for component failure or change of value.	Check C48, C49, C50, C51, R58, R60, R61, T5 speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A-11 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or no Sound".

POWER

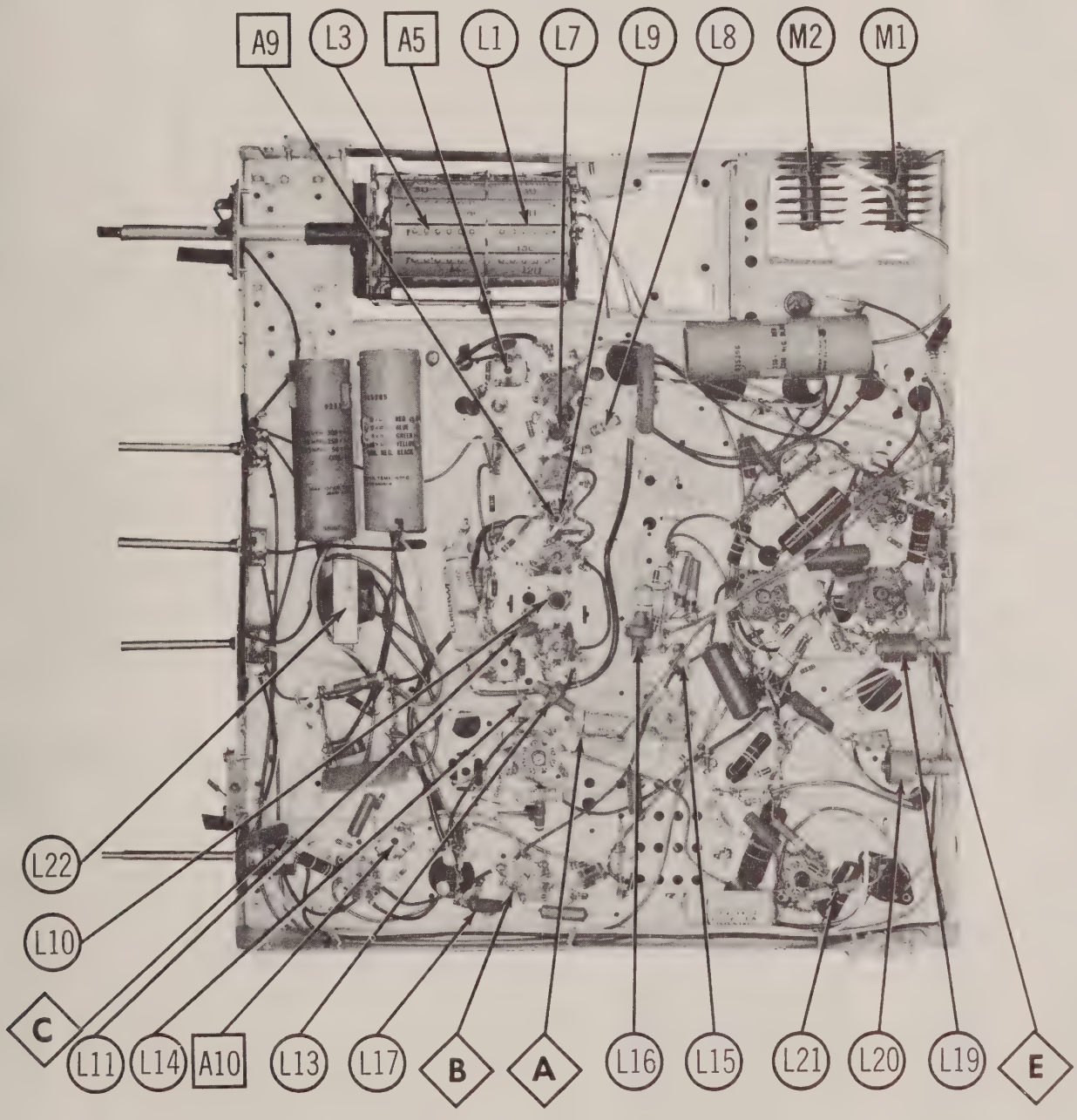
DEAD SET

If filaments fail to light, check all tubes. These tubes are connected in series. Check AC interlock assembly. Check switch on volume control and R98. If filaments light, check M1, M2 and R101. Check B+ filter and decoupling network. Check fuse M3.

SMALL AND/OR DIM PICTURE

Check M1, M2, R101 and C1. Check B+ filter and decoupling network.

L. F. [illegible]SHIP
3924 MEADE ST.
DENVER, COLORADO



EMERSON MODELS 1108D, 1109D, 1110D, 1111D, 1112D, 1113D, 1116D, 1117D, 1120D, 1121D, 1122D, 1123D, 1124D, 1125D, 1126D, 1127D (Ch. 120257-D, 120258-D, 120263-D 120265-D)

CHASSIS BOTTOM VIEW-INDUCTOR AND ALIGNMENT IDENTIFICATION

SET 296 FOLDER 6

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: EMERSON PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	8BZ7	8BZ7	9AJ	
V2	Mixer-Osc.	6U8	6U8	9AE	
V3	1st. Video IF Amp.	3CB6	3CB6	7CM	
V4	2nd. Video IF Amp. Sound IF Amp.	3CB6	3CB6	7CM	
V5	3rd. Video IF Amp.	3CB6	3CB6	7CM	
V6	Video Detector-AGC Rectifier	3AL5	3AL5	6BT	
V7	Video Output	12BY7A	12BY7A	9BF	
V8	Limiter-Sync Separator	6U8	6U8	9AE	
V9	Discriminator-AF Amplifier	6T8	6T8	9K	
V10	Audio Output	5V8GT	5V8GT	7AC	
V11	Sync Amplifier-Vert. Mult.	6SN7GTB	6SN7GTB	8BD	
V12	Vert. Mult.-Vert. Output	5V8GT	5V8GT	7AC	
V13	Horiz. AFC-Horiz. Osc.	6SN7GTB	6SN7GTB	8BD	
V14	Horiz. Output	12CU6	12CU6	6AM	
V15	Damper	1LAX4GTA	1LAX4GTA	6CG	
V16	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: EMERSON PART No.	CBS	GENERAL ELECTRIC	SYLVANIA	WESTINGHOUSE	RETMA BASE TYPE	NOTES
V17	21ALP4A ① 34DP4A ①	21ALP4A ① 21ALP4 34DP4A ①	21ALP4A ①	21ALP4A ② 21ALP4 ① 21ALP4 34DP4A ② 24DP4	21ALP4A ① 21ALP4 24DP4A ② 24DP4	12L 12L 12L	① Aluminized ② Silver screen

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	EMERSON PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	NOTES
C1	250	150	925306	FP31.7	TD-250-150	S-110	Note 1
C2A	120	300	925305	WQ405	TM-4117	S-830	
B	40	300				C-Q-310	
C	40	300					
D	10	250					
C3A	120	300	925304	WT400	CDB-1011	S-830	
B	40	250				C-D-343	
C	100	50					

Note 1. Some versions use 120MFD in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT.	EMERSON PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	NOTES
C4	1000	2000	926238	DD30-102	3KV-102	DC3021	
C5	1000	2000	926238	DD30-102	3KV-102	DC3021	
C6	5-8			SD9-10			
C7	1000			DD-102	801-001	DC-521	
C8	3			TCZ-3	NP0A-030	ZT-5533	
C9	.5-3			SD9-3	3115-01-0R5	CT565A	
C10	47			DD-470	831-470	UC-5447	
C11	1.5			TCZ-1R5	NP0A-1R5	ZT-5515	
C12	800						
C13	47			MFT-50			
C14	.5-3			SD9-3	3115-01-0R5	CT565A	
C15	.5-3			SD9-3	3115-01-0R5	CT565A	
C16	5						
C17	10			TCZ-10	NP0K-100	ZT-541	
C18	800						
C19	800						
C20	330			DD-331	811-331	UC-5322	
C21	1000			DD-102	801-001	DC-521	
C22	500					DC-531	
C23	1000		926077	DD-102	801-001	DC-521	
C24	5000		926109	DD-502	811-005	DC-525	
C25	39		926082	TCN-39	NT50K-390	NT-5439	
C26	1000		926077	DD-102	801-001	DC-521	
C27	.1	300	922315	DF-104		PT401	Note 2
C28	680		926076	DD-681	811-681	UC-5368	
C29	100		926095	TCN-101	NT50L-101	NT-531	
C30	39		926083	TCN-39	NT50K-390	NT-5439	Note 3
C31	5000		926109	DD-502	811-005	DC-525	
C32	470		926081	DD-471	831-471	UC-5347	
C33	470		926081	DD-471	831-471	UC-5347	
C34	680		926076	DD-681	811-681	UC-5368	
C35	1000		926077	DD-102	801-001	DC-521	
C36	680		926076	DD-681	811-681	UC-5368	
C37	.33	300	922325			PT4022	
C38	5		926017	TCZ-5	NP0A-050	ZT-555	
C39	47		926000-1	TCN-47	NT50K-470	NT-5447	
C40	.1	200	922315	DF-104		PT401	
C41	.047	400	922554	DF-503		PT4047	
C42	1000		926077	DD-102	801-001	DC-521	
C43	100		926096	DD-101	811-101	UC-531	
C44	5000		926109	DD-502	811-005	DC-525	
C45	5000		926109	DD-502	811-005	DC-525	
C46	100		926096	DD-101	811-101	UC-531	
C47	.0033	400	922553	D6-332	GP2-333-322	PT6322	
C48	.0047	400	922553	D6-472	GP2-333-472	PT6247	
C49	.001	400	922515	D6-102	GP2L-102	PT601	
C50	.047	400	922554	DF-503		PT4047	
C51	.0047	600	922753	D6-472	GP2-333-472	PT6247	
C52	.01	400	922514	D6-103	GP2-333-103	PT4U	
C53	220	500	911184	D6-221	GP2K-221	MC240	
C54	.01	400	922514	D6-103	GP2-333-103	PT4U	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: EMERSON PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	NOTES
C55	.001	400	922513	D6-102	GP2L-102	PT621	
C56	.0047	400	922553	D6-472	GP2-333-472	PT6247	
C57	.0047	400	922553			MCD465	
C58	.15	400	922431			PT4015	
C59	.1	400	922315	DF-104		PT401	
C60	.01	600	922714	D6-103	GP2-333-103	PT6U	
C61	82	500	911160	D6-820	801-820		
C62	82	500	911160	D6-820	801-820		
C63	.047	400	922554	DF-503		PT4147	
C64	.022	400	922524	DF-303	817-03	PT4122	
C65	.47	200	922355			PT4047	
C66	.047	400	922554	DF-503		PT4147	
C67	330	500	911187	D6-331	811-331		
C68	.01	600	922614				
C69	820	500	911178		811-821		
C70	.0047	400	922453	D6-472	GP2-333-472	PT6247	
C71	.01	300	922314	D6-103	GP2-333-103	PT4U	
C72	.1	400	922315	DF-104		PT401	
C73	.47	200	922355			PT4047	
C74	.1	600	922715	DF-104		PT601	
C75	47	4000	926130	DD60-470			Note 4
C76	100	3000	926330	DD30-101	3KV-101	DC3021	
C77	1000		926077	DD-102	801-001	DC-521	Note 2
C78	1000		926077	DD-102	801-001	DC-521	
C79	1000		926077	DD-102	801-001	DC-521	
C80	1000		926077	DD-102	801-001	DC-521	
C81	1000		926077	DD-102	801-001	DC-521	
C82	.01	600	922301	D6-103	GP2-333-103	PT4U	
C83	1000	2000	926236	DD30-102	3KV-103	DC3021	

Note 2. Not used in some versions.
Note 3. When L9 is part #72012B, C30 is 47MMF (Part #928000-1).
Note 4. Used only in chassis 120257D and 120258D.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	600Ω	½	390306	QJ-799*		F7-3		Contrast (Panel)
B	1Meg	½				R2-52	U8368	Volume (Rear) Attach to R1A.
C	Switch					KB-1		Attach to R1B.
R2A	200KΩ	½	390297	QH-139	A47-200K-S	AB-46	U-43	Brightness
B	Shaft		Not Req.	Not Req.	R8-3	AK-6	Not Req.	Attach to R2A.
R3A	1Meg	½	390299	QH-137	A47-1Meg-S	AB-59	U-54	Vertical Hold
B	Shaft		Not Req.	Not Req.	R8-3	AK-4	Not Req.	Attach to R3A.
R4A	50KΩ	½	390298	QH-133	A47-50K-S	AB-31	U-35	Horizontal Hold
B	Shaft		Not Req.	Not Req.	R8-3	AK-4	Not Req.	Attach to R4A.
R5A	100KΩ	½	390287	QH-138	A47-100K-S	BK-40	TAP3L	Picture Stabilizer
B	Shaft		Not Req.	TQ	RN-3	Not Req.	Not Req.	Attach to R5A.
R6A	1500Ω	½	390343	QH-109	A47-1500-S	AB-6	TAP13L	Vertical Linearity
B	Shaft		Not Req.	TQ	RN-3	AK-19	Not Req.	Attach to R6A.
R7A	1Meg	½	390275	QH-139	A47-2Meg-S	AK-75	TAP2L	Vertical Size
B	Shaft		Not Req.	TQ	RN-3	Not Req.	Not Req.	Attach to R7A.
R8	50Ω	2	390350		39-50			Horizontal Centering (Wire Wound) See Note L

Note L Used in chassis 120257-D and 120258-D only.
*CONCENTRIKIT EQUIVALENT; K-4 KIT, BASE ELEMENTS AND SHAFTS; B17-105, P6-224 (Panel)
B13-137, R1-308 (Rear)
76-1 Switch

RESISTORS

ITEM No.	RATING: OHMS	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R9	15KΩ	½	350772	BTS-15K	
R10	100KΩ	1	380977	BTA-100K	
R11	22KΩ	½	340812		
R12	470KΩ	½	340892		
R13	470KΩ	½	341132		
R14	820KΩ	½	341183		
R15	1500Ω	1		BTA-1500	
R16	10KΩ	½	340722		
R17	33000Ω	½			
R18	6800Ω	½			
R19	100KΩ	½	340972		
R20	100KΩ	½	340972		
R21	100KΩ	½	340972		
R22	15KΩ	½	340772		
R23	82000Ω	½	340712		
R24	470KΩ	½	341132	BTS-470K	
R25	1Meg	½	351212		Note 1
R26	15Ω	½	340052	BTS-15	
R27	470Ω	½	350412	BTS-470	
R28	68Ω	½	340212	BTS-68	
R29	270Ω	½	340832		
R30	15KΩ	½	340772		
R31	47Ω	½	350412	BTS-470	
R32	47Ω	½	340172	BTS-47	
R33	56000Ω	½	340872		
R34	470Ω	½	350412	BTS-470	
R35	180Ω	½	340312	BTS-180	
R36	100KΩ	½	380972		
R37	1Meg	½	351212		
R38	330KΩ	½	341092		
R39	15KΩ	½	340772		
R40	15KΩ	½	340772		
R41	470Ω	½	340552		
R42	470KΩ	½	341132		
R43	10KΩ	1	370722		
R44	22KΩ	½	340812		
R45	10KΩ	2	780722	BTB-10K	
R46	10KΩ	2	780722	BTB-10K	
R47	10KΩ	½	340722		
R48	220KΩ	½	351052		
R49	220KΩ	½	351052	BTS-220K	
R50	10Meg	½	351452	BTS-10Meg	

ITEM No.	RATING: OHMS	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R51	22KΩ	½	340812	BTA-22K	
R52	10KΩ	½	340732	BTS-10K	
R53	47KΩ	½	340412	BTS-47K	
R54	100KΩ	½	340972	BTS-100K	
R55	100KΩ	½	340972	BTS-100K	
R56	68KΩ	½	350832	BTS-68K	
R57	10Meg	½	351212	BTS-10Meg	
R58	220KΩ	½	351052	BTS-220K	
R59	470KΩ	½	351132	BTS-470K	
R60	1500Ω	2	780532	BTH-1500	
R61	470Ω	1	370412	BTA-470	
R62	15KΩ	½	350772		
R63	470KΩ	½	351132		
R64	2.2MEG	½	351292		
R65	22KΩ	½	340812		
R66	27KΩ	½	340832		
R67	1Meg	½	351212		
R68	10KΩ	½	340732		
R69	22KΩ	½	340812		
R70	68KΩ	½	340932		
R71	33KΩ	½	340852		
R72	470KΩ	½	341132		
R73	1.5Meg	½	341252		
R74	2.2Meg	½	351292		
R75	330Ω	½	350372		
R76	100KΩ	½	340972		
R77	56ΩΩ	½	340432		
R78	56ΩΩ	½	340432		
R79	22000Ω	½	340572		
R80	2200Ω	½	340572		
R81	330KΩ	½	341092		
R82	180KΩ	½	340932		
R83	820KΩ	½	341192		
R84	82KΩ	½	340952		
R85	3900Ω	½	340532		
R86	150KΩ	½	341012		
R87	330KΩ	½	340192		
R88	8200Ω	½	340712		
R89	47KΩ	½	340812		
R90	150KΩ	½	341012		
R91	390KΩ	½	341123		
R92	56KΩ	½	340812		

RESISTORS (cont)

ITEM No.	RATING: OHMS	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R93	68Ω	1	350212		
R94	15KΩ	2	780772	BTB-15K	Note 3
R95	100Ω	2	780252		
R96	10KΩ	½	340732		
R97	2.7Ω	½	394164		Note 4
R98	50Ω	25	370587		

Note 1. Some versions use a 10000 ½W or 820Ω ½W resistor in this application.
Note 3. Some versions use a 1Meg ½W resistor in this application.
Note 3. A 82000 2W resistor is used in chassis 120263-D, 120265-D only.
Note 4. Not used on chassis 120263-D, 120265-D.

ITEM No	RATING: OHMS	WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R99	2000Ω	10	394129	PW10-2000	
R100	470Ω	2	780412	BTB-470	
R101	5Ω	10	394127	PW10-5	
R102	220KΩ	½	351052	BTS-220K	Note 4
R103	100KΩ	1	380977	BTA-100K	

TRANSFORMER (FILAMENT)

ITEM No	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: EMERSON PART No	Halldorson PART No	Merit PART No.	RCA TYPE No.	Stancor PART No.	Thordarson PART No	Triad PART No	NOTES
T1	117VAC			720054		F-5511 ①	P-2944 ①		P-6134 ①	21F09	F-14X ①
Taps	.1A										
	6.3VAC										
	.2.8A										

① Transformer has separate filament winding, tape 6.3VCT

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: EMERSON PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	723108 ① 726107 ②							
T3	Vert. Output Trans.	723108 723109 ②	Z1900 ④	A-3533		V303 ⑤	A-8143 ③	26S72	A-108X
T4A	Yoke (90° Horiz. (110MM)	708233 ②	DF607 ④	MDF-92 ⑤	225D1 ⑥		DY-15A ⑦	Y-16 ⑧	Y-41-1 ⑨
B	Vert. (39.5MM)								

① Used on chassis' 120257-D, & 120258-D.
② Used on chassis' 120263-D, & 120265-D.
③ Alternate Part Number.
④ Use 8 to 1 turns ratio.
⑤ Includes capacitor C76, resistors R77 & R78.
⑥ Use original horizontal yoke damping network. Ground terms #5 & #8 of vertical yoke as in original circuit.
⑦ Drill new mounting hole(s).

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T5	3.7KΩ	3.3Ω	734305	Z1009 ①	A-2998 ②	A-3856 ①	24S48	S-51X ①	① Drill one new mounting hole. ② Use 3500Ω tap.

SPEAKER

ITEM No	RATINGS: SIZE	FIELD	V C IMP	REPLACEMENT DATA: EMERSON PART No	QUAM PART No	NOTES
SP1	6"	PM	3.3Ω	180140 ①	6A1	① Used in models 1106D, 1109D, 1113D, 1113D, 1130D, 1131D,
	6"	PM	3.3Ω	180141 ②	6A1	1133D, 1135D, 1136D, and 1137D.
	12"	PM	3.3Ω	180130 ③	12A31	② Two used in models 1124D, and 1125D.
						③ Used in models 1110D, 1111D, 1116D, and 1117D.

COILS (RF-IF)

ITEM No	USE	DC RES.: PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	0Ω	0Ω					
L2	Neut. Coil	0Ω						
L3	RF Mixer Grid							
	Osc. Coils	0Ω						
L4	Conv. Plate	.1Ω	0Ω					
L5	47.25MC Trap	0Ω		720154	20-1047*		6319	
L6	1st Video IF	.3Ω		730301	17-1003a	TV-127a	6325a	Includes 41.25MC Trap.
L7	2nd Video IF	.1Ω	.3Ω	730175	17-4523	TV-130	6319	
L8	RF Coil	1.3Ω		705093	19-1001		6804	1.5Microhenries, IRC Part #C1.A.
L9A	3rd Video IF	0Ω	0Ω					
B	2nd Sound	1.4Ω		730181				Note 1
L10	4th Video IF	0Ω	0Ω	730175	17-4523	TV-130	6319	
L11	Series Peaking Coil	1.1Ω		708309	19-1003		6808	4.6 Microhenries
L12	1st Sound IF	7Ω	1.3Ω	730178	19-3445	TV-113	6303	
L13	Shunt Peaking Coil	1.2Ω		708114	19-6400		6136	440 Microhenries
L14	Series Peaking Coil	4.2Ω		705024	19-1004		6810	5.8 Microhenries, IRC Part No. C1.A.
L15	Series Peaking Coil	1.2Ω		708099	19-3300		6132	330 Microhenries
L16	Shunt Peaking Coil	1.2Ω		708114	19-6400		6136	440 Microhenries
L17	RF Coil	1.1Ω		708309	19-1003		6808	4.5Microhenries
L18	Discriminator	4.2Ω	4.2Ω CT	730180	17-1023a	TV-114	6304	
L19	Horiz. Osc.	37Ω	90Ω	716083	20-1402a	TV-162a	6313	
L20	Horiz. Phase	3Ω		708180	20-1402a	TV-162a	6314	
L21	RF Choke	8.2Ω		705091	19-1005		6803	10 Microhenries, IRC Part No. C1-1.

Note 1. Alternate Part No. 720236 used when C30 is 47MMF capacitor.
* Disconnect 39MMF capacitor
■ Use one winding only.
▲ Enlarge chassis hole & drill mounting holes.
● Horiz. Osc. & horiz. phase coils replaced with one unit. Cut out chassis hole & drill mounting holes. Reverse coil mounting in can.

L. F. BLANKENSHIP
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DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L22	.150ADC	20.4Ω	52HY	737023			C-2328①		

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	EMERSON PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.240A	817019	1090A	MR-300	6S300	6Q4	300	
M2	.240A	817019	1090A	MR-300	6S300	6Q4	300	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			EMERSON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3		1.2A 125V	808008		32301.2 (3AGLC S/B 1 2/10A)		MDL 1 1/4 with 9936-.156 Cap	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	Dial Light		Chassis 120558-D, 120265-D only.
M5	Tuner	470802	VHF-Chassis 120257-D, 120263-D.
M6	Tuner	470800	VHF-UHF-Chassis 120258-D, 120265-D.
M7	Trap		VHF Ant. Input Filter
M8	Centering Device	708134	Alternate Part No. 708149
M9	Ion Trap	708129	
	Cabinet	140655	Models 1108D, 1109D-Ebony Finish
	Cabinet	140655A	Models 1108D, 1109D-Mahogany Finish
	Cabinet	140655B	Models 1108D, 1109D-Blond Finish
	Cabinet	140662	Model 1110D-Mahogany Finish
	Cabinet	140662A	Model 1110D-Blond Finish
	Cabinet	140663	Model 1111D-Mahogany
	Cabinet	140663A	Model 1111D-Blond Finish
	Cabinet	140651	Models 1112D, 1113D-Mahogany Finish
	Cabinet	140651A	Models 1112D, 1113D-Blond Finish
	Cabinet	140661	Model 1116D-Mahogany Finish
	Cabinet	140661A	Model 1116D-Blond Finish
	Cabinet	140668	Model 1117D-Mahogany Finish
	Cabinet	140668A	Model 1117D-Blond Finish
	Cabinet	140673	Model 1120D-Mahogany Finish
	Cabinet	140673A	Model 1120D-Blond Finish
	Cabinet	140678	Model 1121D-Mahogany Finish
	Cabinet	140673A	Model 1121D-Blond Finish
	Cabinet	140689	Models 1122D, 1123D-Mahogany Finish
	Cabinet	140689A	Models 1122D, 1123D-Blond Finish
	Cabinet	140674	Models 1124D, 1125D-Mahogany Finish
	Cabinet	140674A	Models 1124D, 1125D-Blond Finish
	Cabinet	140675	Model 1126D
	Cabinet	140676	Model 1127D
	Knob	450138A	Contrast-Model 1108D(Ebony Cabinet) & Model 1126D (Mahogany & Blond Cabinets)
	Knob	450138	Contrast-Models 1108D, 1122D, 1124D-Mahogany & Blond Cabinets
	Knob	450138B	Contrast-Models 1110D, 1112D, 1116D, 1120D
	Knob	450137A	Fine Tuning-Model 1108D (Ebony Cabinet) & Model 1126D (Mahogany & Blond Cabinets)
	Knob	450137	Fine Tuning-Models 1108D, 1122D, 1124D-Mahogany & Blond Cabinets
	Knob	450137B	Fine Tuning-Models 1110D, 1120, 1116D, 1120D
	Knob	450134A	Shank-on-off-volume-Model 1108D (Ebony Cabinet) & Model 1126D (Mahogany & Blond Cabinets)
	Knob	450134	Shank-off-off-volume - Models 1108D, 1122D, 1124D (Mahogany & blonde cabinets)
	Knob	450134B	Shank -off-off-volume - Models 1110D, 1112D, 11116D, 1120D
	Knob	460262A	Flange-On-Off-Volume-Model 1108D (Ebony Cabinet) & Model 1126D (Mahogany & Blond Cabinets)
	Knob	460262	Flange-On-Off-Volume-Models 1108D, 1122D, 1124D, (Mahogany & Blond Cabinets)
	Knob	460262B	Flange-On-Off-Volume-Models 1110D, 1112D, 1116D, 1120D
	Knob	450133A	Shank-Selector-Model 1108D (Ebony Cabinet) & Model 1126D (Mahogany & Blond Cabinets)
	Knob	450133	Shank-Selector-Models 1108D, 1122D, 1124D, (Mahogany & Blond Cabinets)
	Knob	450133B	Shank-Selector-Models 1110D, 1112D, 1116D, 1120D
	Knob	460261A	Flange-Selector-Model 1108D (Ebony Cabinet) & Model 1126D (Mahogany & Blond Cabinets)
	Knob	460261	Flange-Selector-Models 1108D, 1122D, 1124D (Mahogany & Blond Cabinets)
	Knob	460261B	Flange-Selector-Models 1110D, 1111D, 1116D, 1120D
	Knob	460424	Contrast-Models 1109D, 1127D
	Knob	460424A	Contrast-Models 1111D, 1113D, 1117D, 1121D, 1123D, 1125D
	Knob	460423	Fine Tuning-Models 1109D, 1127D
	Knob	460423A	Fine Tuning-Models 1111D, 1113D, 1117D, 1121D, 1230, 1125D
	Knob	460422	On-Off-Volume-Model 1108D
	Knob	460422B	On-Off-Volume-Models 1111D, 1113D, 1117D, 1121D, 1123D, 1125D
	Knob	460422A	On-Off-Volume-Model 1127D
	Knob	460421	Channel Selector-Model 1109D
	Knob	460421B	Channel Selector-Models 1111D, 1113D, 1117D, 1121D, 1123D, 1125D
	Knob	460421A	Channel Selector-Model 1127D
	Knob	460621	UHF Dial-Models 1109D, 1111D, 1113D, 1117D, 1121D, 1123D, 1125D, 1127D
	Safety Glass	520227	Models 1108D, 1109D, 1110D, 1111D, 1112D, 1113D
	Safety Glass	520229	Models 1116D, 1117D, 1120D, 1121D
	Safety Glass	520232	Models 1122D, 1123D, 1124D, 1125D
	Safety Glass	520233	Models 1126D, 1127D

TROUBLE SHOOTING AIDS (cont)

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3924 MEADE ST.
DENVER, COLORADO

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V13, V14, V15 and V16. Check waveform W12.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C72, C73, C74, C75 R94 and other associated components.	Check L19, L20, C63, C67, C68, C69, C70, R89, R88, R82 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V14 and V15. Check M1 and M2. Check R94, R101, C69, C70, T2, T4A and other associated components.

BLOOMING

Check by substitution V14, V15 and V16. Check C69, C70, C73, R94, R95, R98, R101, T2, T4A and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or no Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

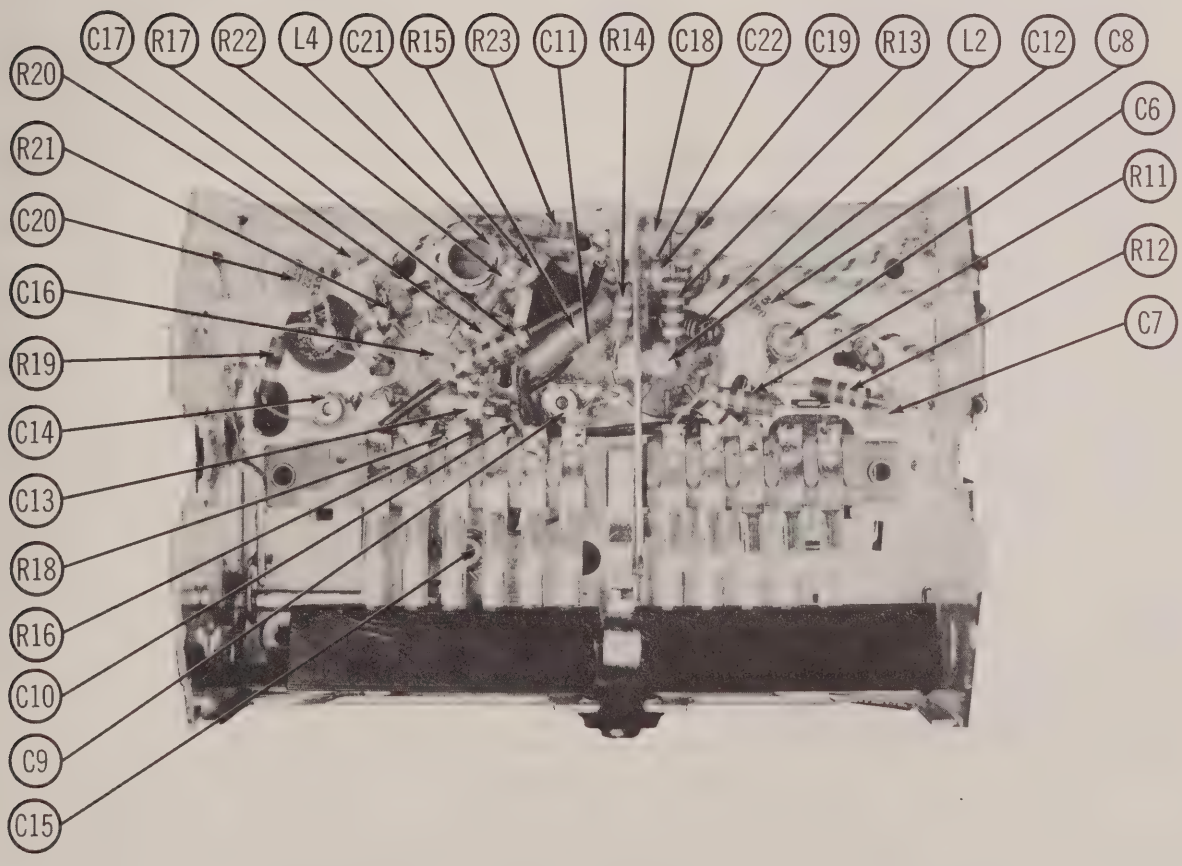
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



RF TUNER BOTTOM VIEW

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet above and slightly to the left of the channel selector shaft.

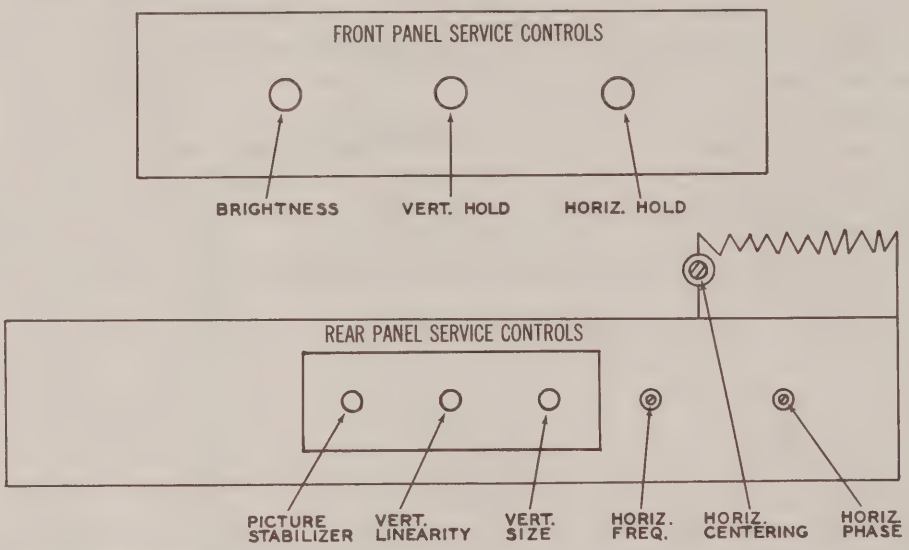
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, pull snap-on frame and remove 8 wood screws from 4 brackets. Remove brackets and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS

PICTURE STABILIZER CONTROL ADJUSTMENT

In normal signal areas the picture stabilizer control (R5) should be set at its maximum clockwise position.

In noisy fringe areas rotate R5 counter clockwise for best sync stability.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horziontal oscillator can be made from the rear panel of the set. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the sound discriminator secondary (L18) located on top of chassis.

FUSES

One fuse is used for LV power supply protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

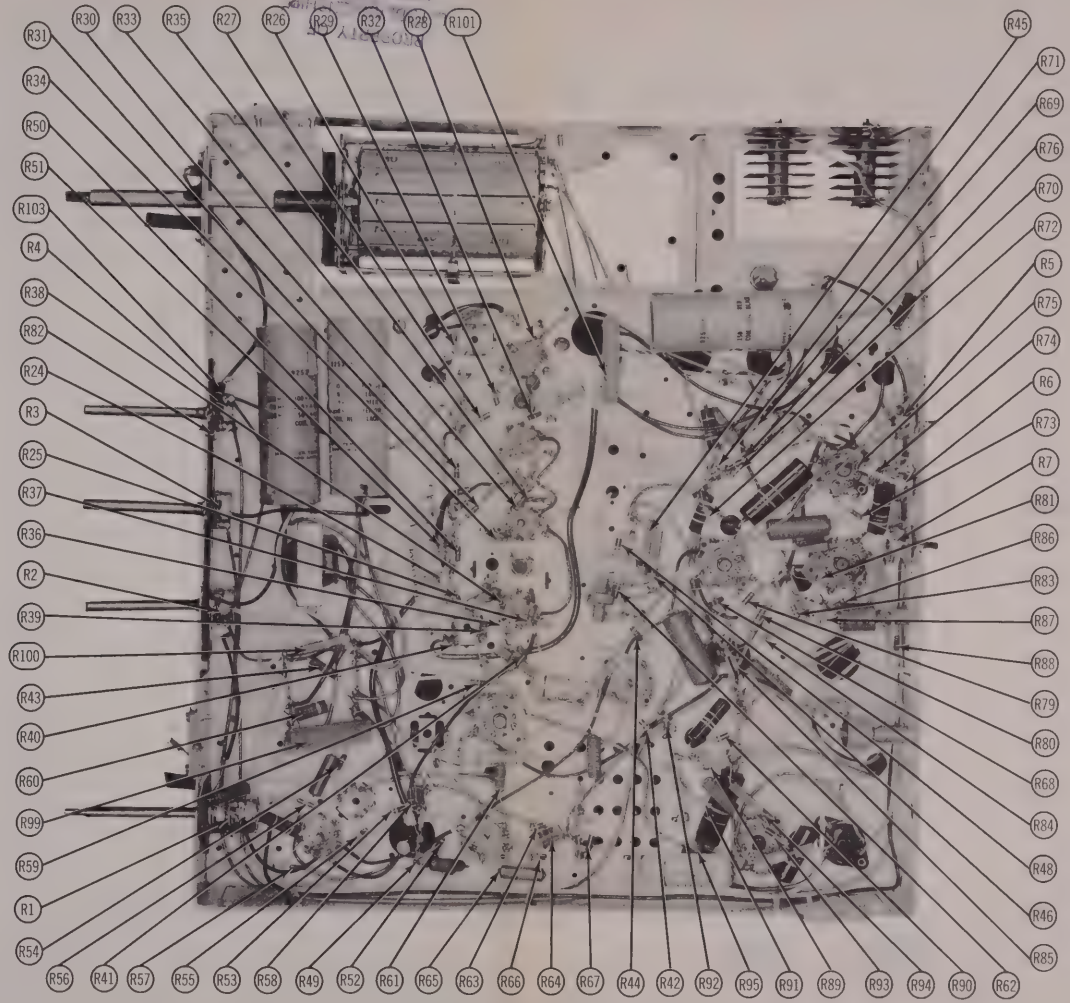
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type control knobs from front panel of cabinet.
2. Remove 11 metal screws. Remove rear cover.
3. Remove 2 metal screws. Remove antenna terminal bracket.
4. Disconnect speaker leads.
5. Remove 2 speaker nuts. Remove speaker.
6. Remove 4 chassis bolts. Remove chassis.

PICTURE TUBE REMOVAL

1. Remove chassis.
2. Remove picture tube socket, HV lead, Ion trap and centering magnet.
3. Remove bolt holding strap together at the top.
4. Remove picture tube.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

KNIGHT
MODEL 96RX635

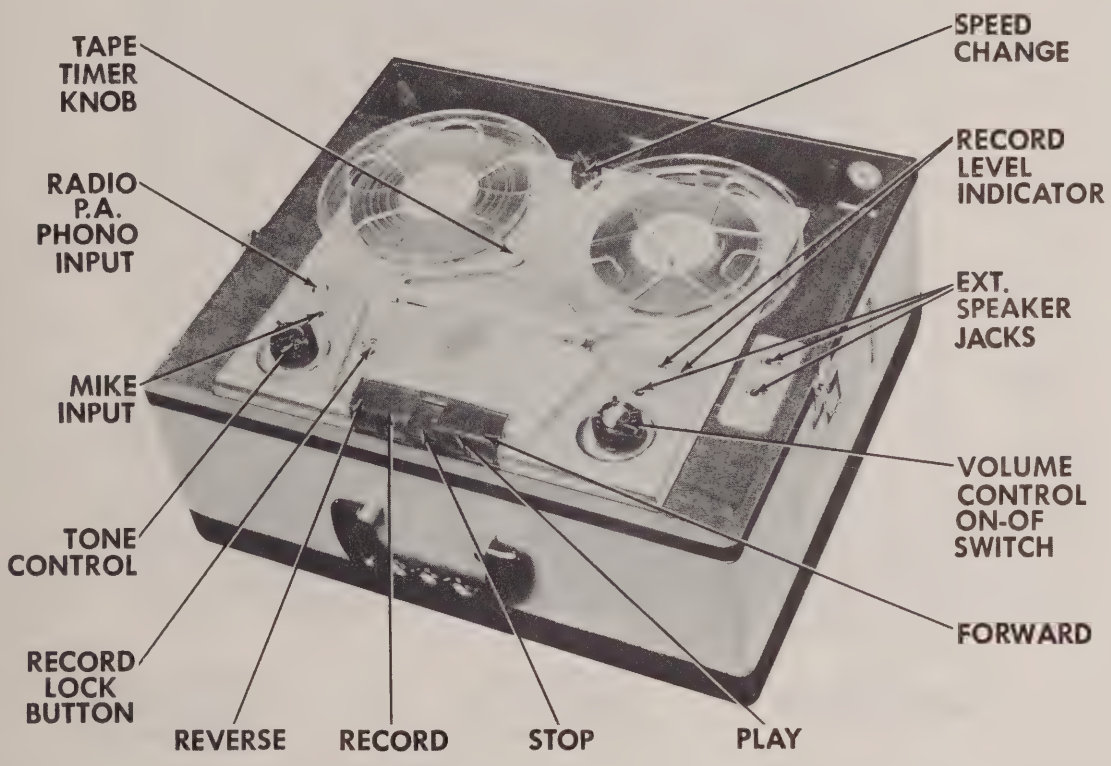


Figure 1

GENERAL INFORMATION

The Knight Model 96RX635 features fingertip operation for Fast Forward, Playback, Stop, Record and Fast Reverse. Double-track recording is used, giving two full length recordings on a single reel of Tape. Any size up to 7" can be used. Two neon recording indicators simplify the recording level setting. New recordings can be made on previously recorded tape since the erase head is automatically positioned when the Record button is pressed or the same recording may be played back indefinitely. Recordings can be made from a radio, television receiver, or phonograph, in addition to those made directly from the microphone. Recordings can be played back through the self-contained speakers, or an external speaker through use of the External Speaker Jack.

Using both channels of the tape, the recording time is as follows:

SIZE	SPEED 3-3/4	SPEED 7-1/2
5" reel	1 hour	1/2 hour
7" reel	2 hours	1 hour

The Knight is designed to operate on 60 cycle, 115 volt, AC supply only. Before connecting to your line supply, be absolutely certain that it agrees with the above specifications.

Allied Radio Corporation
833 West Jackson Boulevard
Chicago 7, Illinois

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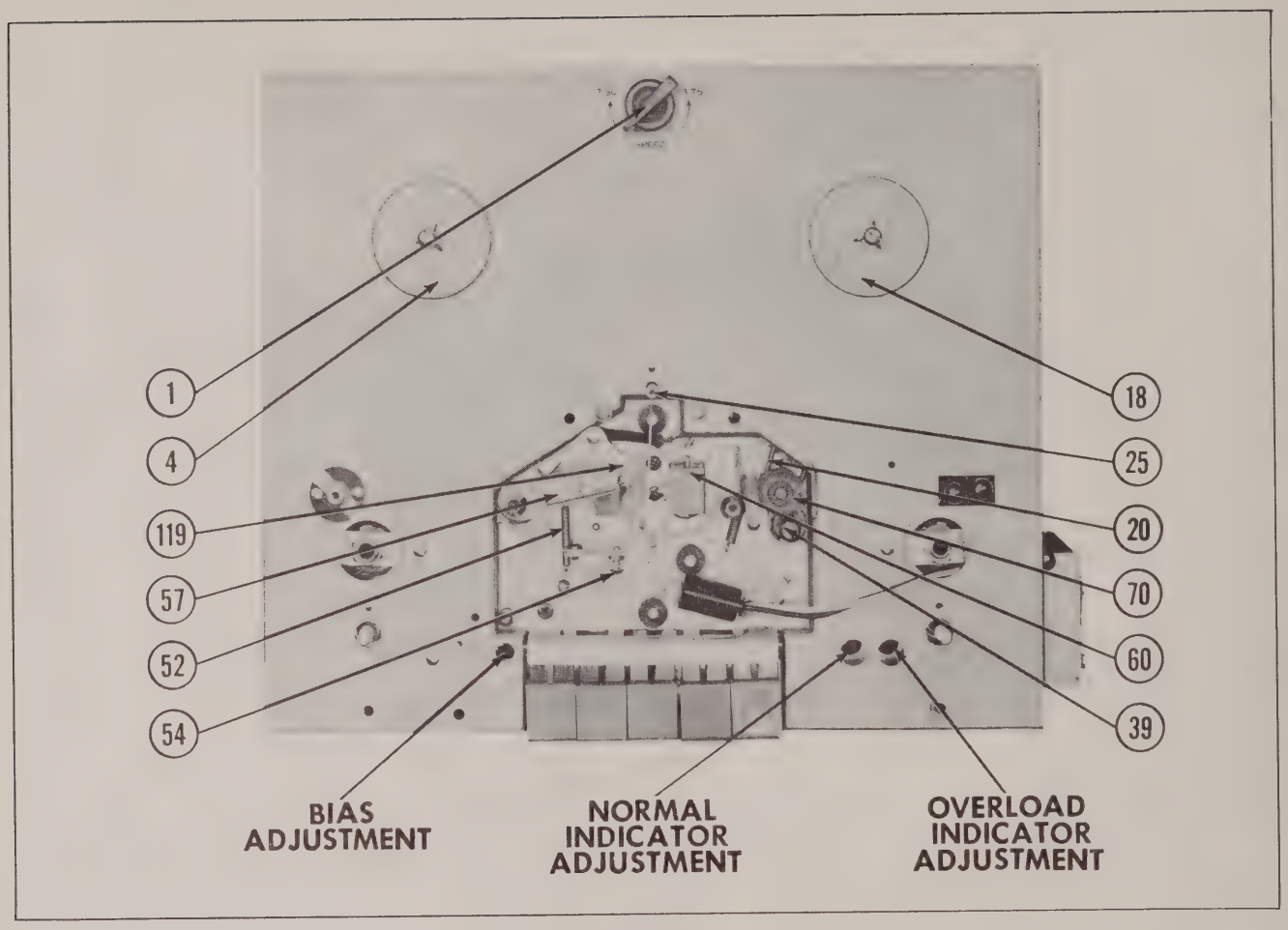


Figure 2

OPERATING INSTRUCTIONS

Preparation For Operation-

1. Remove the AC power cord, 5" reel of tape, empty reel and the microphone from the storage compartment.

2. Depress the "Stop" button.

3. Plug the AC cord into a convenient wall receptacle of the proper rating.

4. Set speed change knob to 7.50 or 3.75 as desired.

5. Place Remote-Normal switch in "Normal" position.

CAUTION: Do not turn speed change knob unless "Stop" button is depressed.

When the Forward or Reverse buttons are depressed, the Record and Play buttons are locked so that they cannot be pressed down, with the possibility of spilling tape. The buttons should always be pressed down firmly until they latch and the Stop button must be depressed before changing functions or speeds of the recorder.

IMPORTANT: Always depress the Stop button when the machine is not in use.

Speed Change Knob-

The arrow on the speed change knob should point at 7.50 or 3.75 according to the speed desired. This recorder has two speeds, 7 1/2" and 3 3/4" per second The arrow pointing at 7.50 means the unit will operate at the fast speed or 7 1/2" per second.

CAUTION: Turning the speed change knob while the unit is operating will not change the speed. The Stop button must be depressed before the speed can be changed.

Threading The Tape-

1. Place a full reel of tape on the left (supply) spindle, making certain one of the reel slots catch the protrusions of the pan. Unwind about 14" of tape from the supply reel.

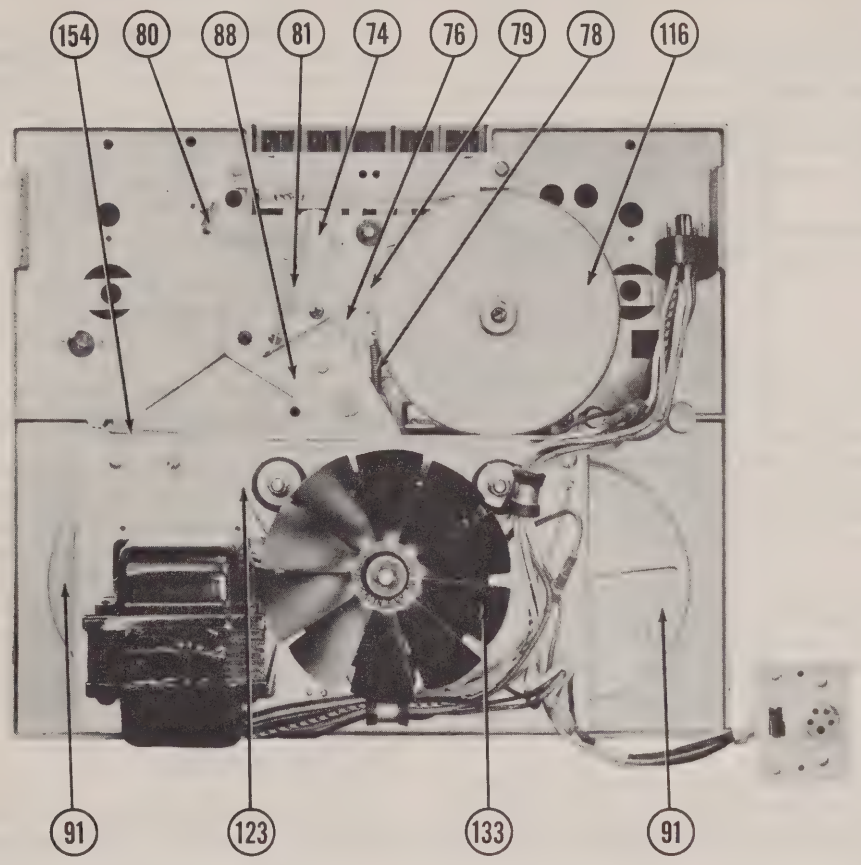
2. Insert free section of tape into the tape slot.

3. Insert free end of tape into one of the three slots in the hub of the right (take-up) reel and while holding the tape in place give the reel two or three turns until the tape is secured.

4. The dull side of the tape should always face away from the operator (rear of unit).

To Record From Microphone-

1. Turn the On-Off Volume control to the right until a click is heard and allow about 30 seconds for



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3824 MEADE ST.
DENVER, COLORADO

Figure 3

the unit to warm up. The pilot light located above the Stop button will glow when the unit is turned on.

2. Insert the microphone plug into the "Microphone" input.

3. Move the record lock button (27) downward with the left hand. This releases the safety lock which prevents accidental erasure.

4. Depress the "Record" button with the right hand (while holding record lock button (27) with the left hand) until it latches.

5. Adjust the "Volume" control until the "Normal" indicator just flashes, while speaking into the microphone. When the "Volume" control is advanced too far the "Overload" indicator will flash and the recording will be distorted. To prevent overload, lower the "Volume" control to a point where the "Overload" indicator will not flash.

6. The "Tone" control does not operate during recording. When recording from radio, set the radio "Tone" control for maximum treble.

To Record From External Radio, TV, Or Phonograph-

1. Insert the phonograph pickup plug into the "Radio-P. A. -Phono" jack.

2. For radio or TV recording, connect patch cord, part No. C20. 233 to the voice coil of the radio or TV receiver speaker by means of the alligator clips. Plug into "Radio-P. A. -Phono" jack.

3. Proceed as described under "To Record From Microphone".

NOTE: Remove patch cord after recording is completed.

To Use Second Track-

1. Depress the "Stop" button when all the tape has wound onto the take-up reel.

2. Remove reel containing tape and place on left-hand supply pan.

3. Place empty reel on right-hand take-up pan.

4. Thread tape as previously described.

To Play Recordings-

1. Turn on unit with "Volume" control knob.

2. Thread tape as described under "Threading The Tape."

3. Set the speed change knob (1) to the speed at which the recording was made.

4. Depress "Play" button until it latches.

5. Adjust "Volume" and "Tone" controls to desired listening level.

High-Speed Forward Or Reverse-

When it is desirable to play a certain portion of the tape over again it is not necessary to rewind the entire tape. By depressing the 'Forward' or 'Reverse' button the tape will advance (or reverse) at a rapid speed.

Several minutes of normal recording can be skipped in a few seconds by the "Reverse" and "Forward" buttons.

Tape Timer-

If, when making recordings or playing a recorded tape, you wish to play back a certain recording, note the reading on the timer scale when the particular recording is being made or heard. Rewind the tape until the number you have noted appears on the scale, press "Stop" button, then press "Play" button and you are now listening to the recording you wanted.

When starting a new reel of tape or re-recording a reel, reset the indicator pointer to "O" by rotating the reset knob. By starting at "O" on all tapes, the number location can be cataloged for each selection on any reel.

To Edit And Splice Tape-

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excessive width.

Erasing Recorded Material-

When the record button is depressed, the erase head is automatically positioned, erasing any previous recording before a new one is made. You may erase material no longer needed, without recording, by depressing the "Record" button and turning the "Volume" control knob to the minimum volume position or extreme counter-clockwise position just before the recorder shuts off. One track is erased at a time. To erase the second track, reverse the reels and repeat the above operation.

To Use Recorder As A Public Address System-

Insert the microphone plug into the "Microphone" input jack. Plug in an extension speaker or speakers if desired and depress the "Record" button. Set the "Volume" and "Tone" controls to the desired listening level. A recording can be made at the same time with a tape placed on the unit in the normal manner.

CAUTION: When using the public address feature, see that the microphone is as far away from the speakers as possible, to prevent "feedback" squeal.

Remote Control Operation-

A socket and switch are provided to allow remote operation up to a distance of 18 feet, either recording or playback. This is accomplished by means of a remote control cable (Mod. No. HC-12). Connect attachment cord as follows:

1. Insert remote control cable plug into remote socket. Be sure remote control switch on end of cable, is in "Standby" position.

2. With control switch on the recorder in "Normal" position start the unit in the regular manner and set "Volume" control to the proper level.

3. Place control switch on the set to "Remote" position. Tape will come to a stop.

The recorder can now be operated (start and stop) by means of the remote cable switch. When starting the recorder by means of the remote control, the switch should be rotated to the "Motor" position and then after a slight pause rotated to the "Record-Play" position. To stop recording or playback, rotate the control switch directly to "Standby" position, pausing slightly at the "Motor" position.

ADJUSTMENTS

Record-Play Head Adjustment-
(See Exploded View)-

To adjust the record-play head (60) for maximum frequency response, make the following adjustment:

1. Remove the rear escutcheon (6) and rear escutcheon plate (26).

2. Properly thread an alignment tape or a good recorded tape on the machine.

3. Set the controls as described under "To Play Recordings".

Grip the vertical portion of the record head mounting bracket with a pair of long-nosed pliers. Rock the mounting bracket and record head from side to side slightly until the maximum high frequencies are obtained. Bend the bracket with the pliers to obtain a permanent set at this position.

Pressure Pad Adjustment-
(See Exploded View)-

1. Remove the front escutcheon (10).

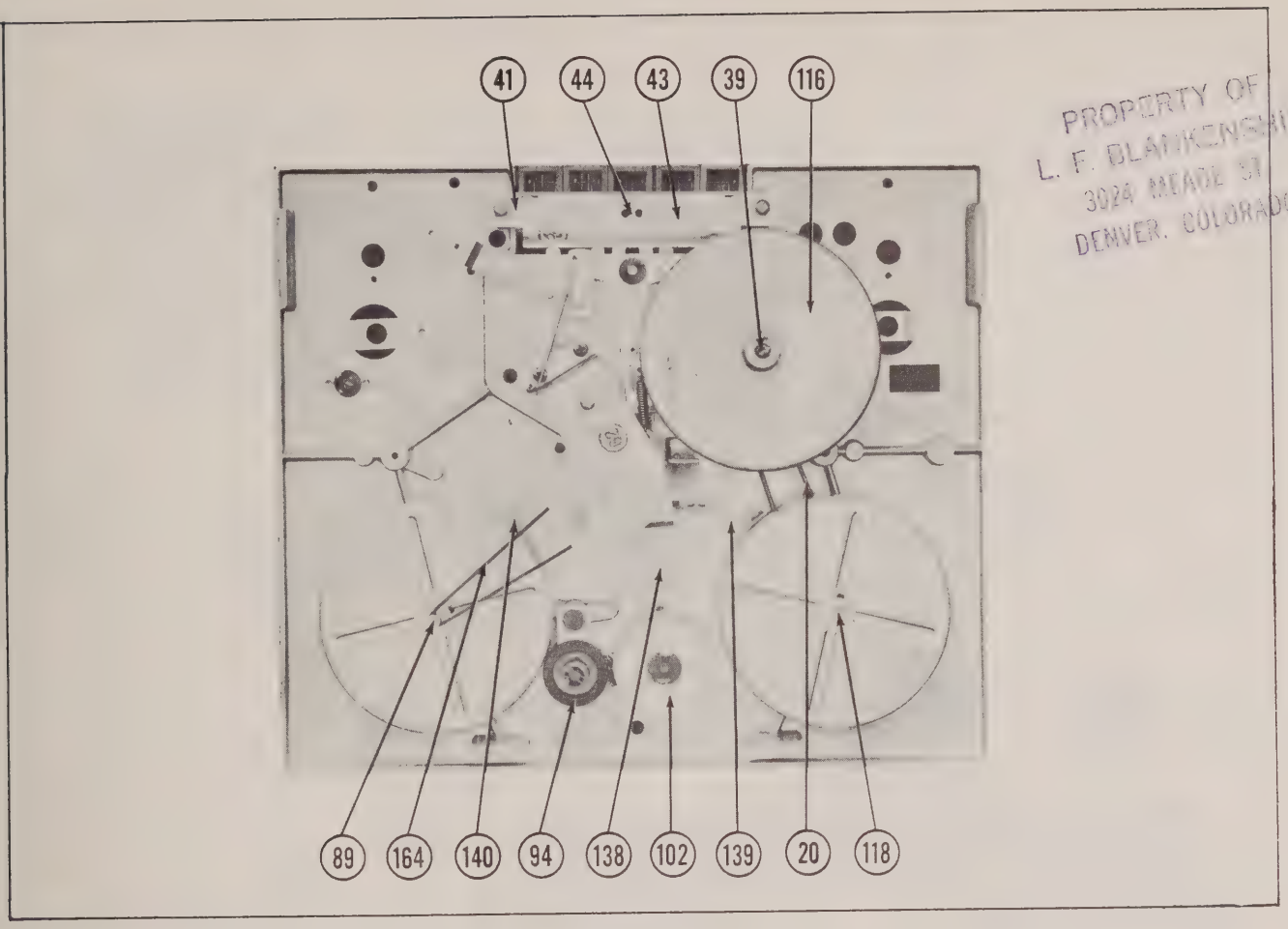
2. Depress the "Play" button. Do not turn the recorder on.

3. Use a pencil type postal scale and check the amount of pressure necessary to just pull the pad away from the tape. The test should be made on the end of the pressure pad mounting spring (65). Adjust the pressure pad for 1 3/4 oz. $\pm$ 1/4 oz. pressure.

(a) The record head pressure pad is adjusted by the locked adjustment screw (54).

(b) The guide post pressure pad (53) is adjusted by bending the pressure pad spring. It must be adjusted for minimum pressure against the tape.

4. After the adjustments are made depress the "Stop" button and replace the front escutcheon.



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3024 MEADE ST
DENVER, COLORADO

Figure 4

Erase Head Adjustment-

1. With tape properly threaded, turn recorder on and depress the "Record" button. Allow tape to run for a few seconds then turn recorder off, but leave "Record" button depressed.

2. With the escutcheons removed check the erase head (57) to see if it is parallel with the tape.

3. Check to see if the top edge of the tape coincides with the top end of the diagonal slot in the erase head (junction of long diagonal slot and short vertical slot). To adjust level of tape, loosen set screw (47), see exploded view, and rotate tape guide post (48) to move tape up or down. Tighten set screw (47).

4. After this adjustment has been made, check to see if the tape moves forward approximately 1/64" when the "Record" button is depressed. If not, loosen the forward adjustment screw (119), see Figure 2, and turn the screw in or out as required to obtain this 1/64" movement. Tighten the lock nut.

Brake Shoe Adjustment-

1. In order to adjust the brake shoes, the complete mechanism must be removed from the carrying case and the speaker disconnected.

2. With all push buttons in the up position the brake shoes (140) should clear the drums by approximately 1/8".

3. Depress the "Stop" button while observing the brake shoes. Both brake shoes must contact the drums at the same time and with equal pressure.

4. The adjustment is accomplished by bending the spring arm (139).

Adjustment For Slow Take-Up Reel-

There are some instances where the spring drive belt (20), see Figures No. 2 and No. 5A, stretches after a period of time. When this happens, the takeup torque will be insufficient to wind tape properly onto the take-up reel. In this case, the belt should be replaced as follows:

Remove rear escutcheon (6) and rear escutcheon plate (26). Remove take-up reel pan (18). With the "Stop" button depressed, remove old spring drive belt from around pressure roller (70) and lift belt clear of recorder. Install new belt by reversing the above procedure.

Bias Adjustment-

Turn the recorder on and depress the "Record" button; use no tape. To determine if the bias is within satisfactory limits without dismantling the unit, merely connect a VTVM from the top lug of the recording head to chassis. If 75 to 100 volts are present no adjustment is necessary.

If the readings are outside of this range, proceed as follows:

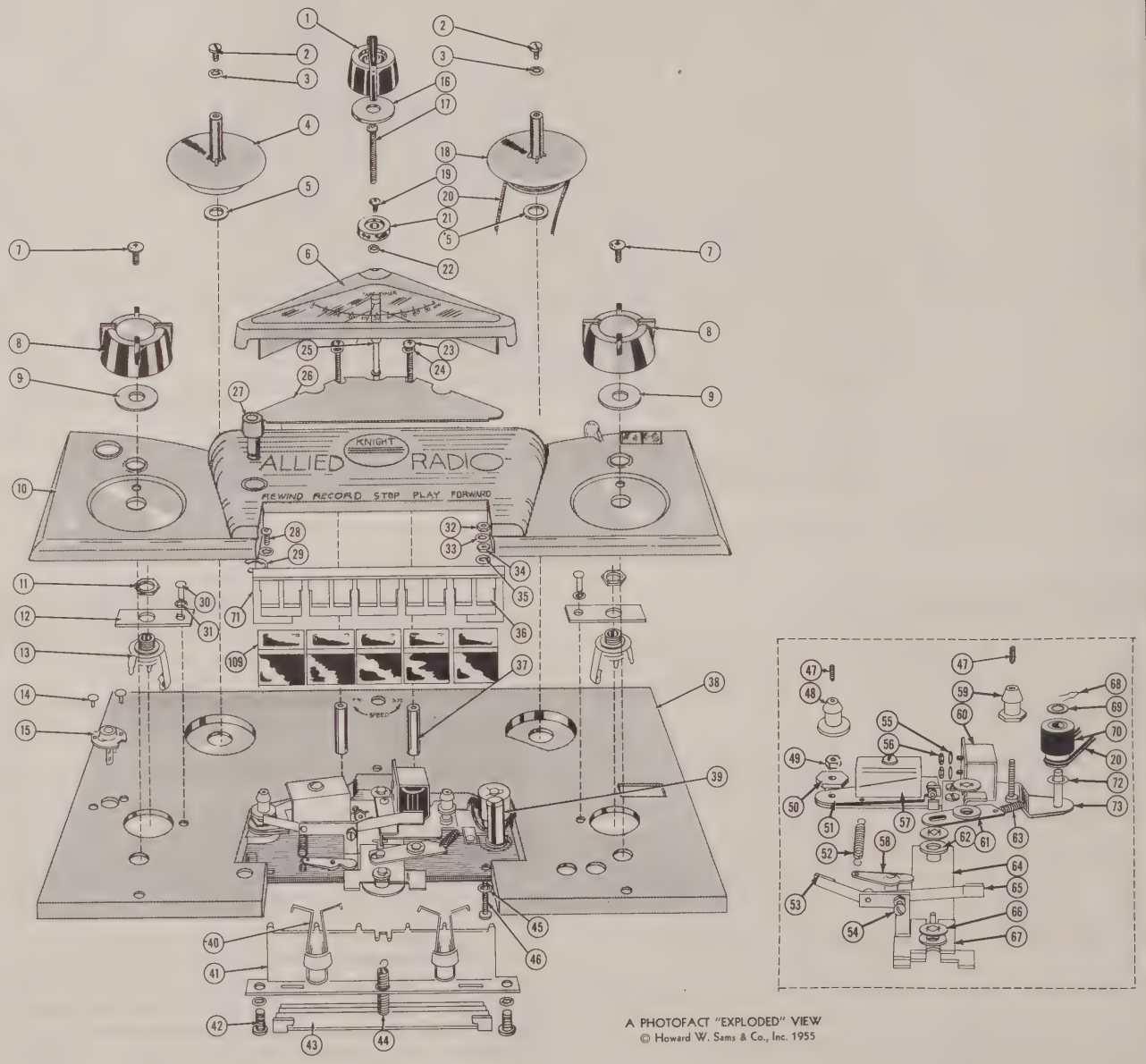

Figure 5A. Exploded View Of Parts Above Baseplate

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3924 BRIGHTON BLVD.
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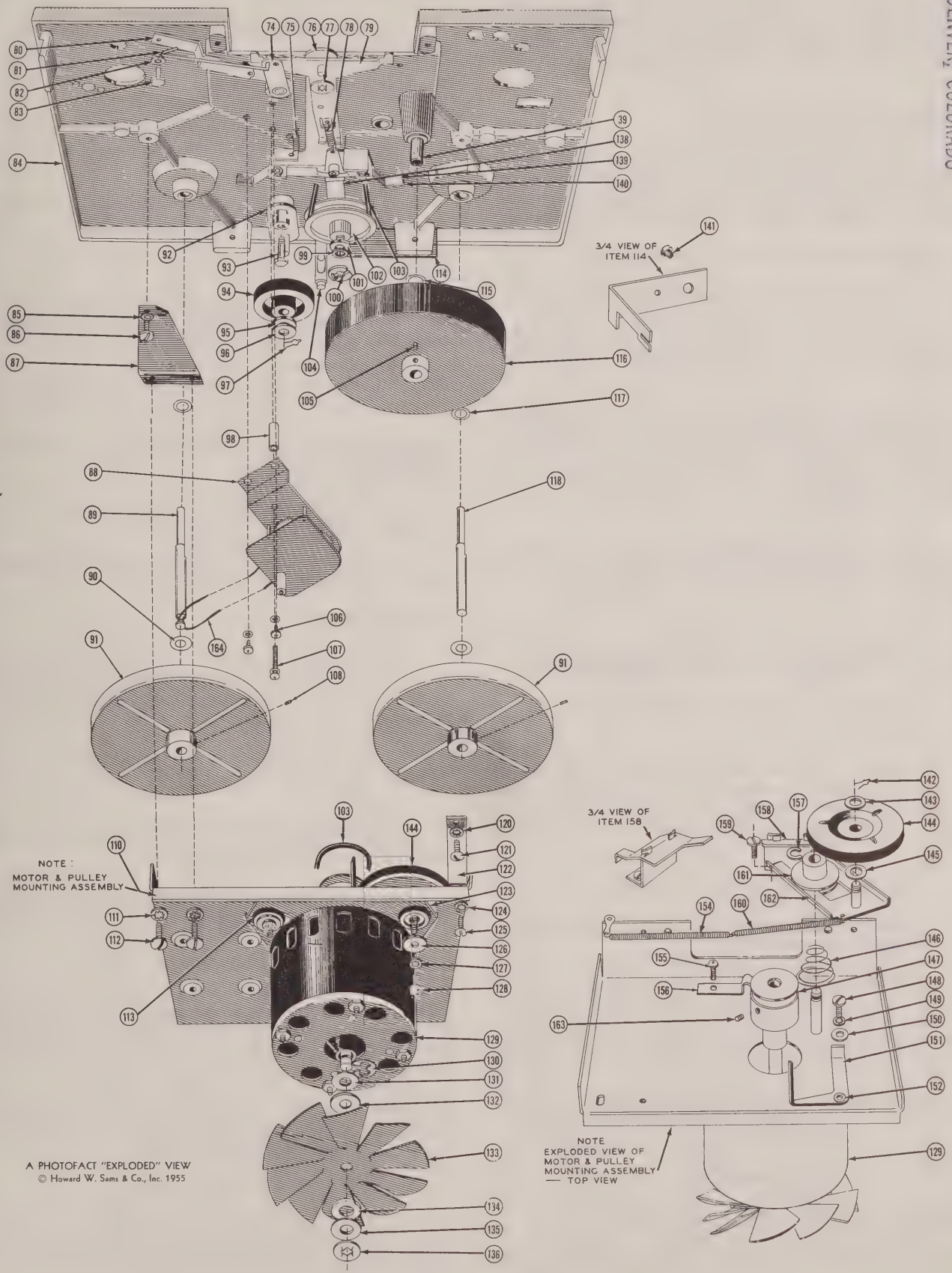
3/4 VIEW OF ITEM 114
3/4 VIEW OF ITEM 158
NOTE :
MOTOR & PULLEY MOUNTING ASSEMBLY
NOTE
EXPLODED VIEW OF MOTOR & PULLEY MOUNTING ASSEMBLY — TOP VIEW
A PHOTOFACT "EXPLODED" VIEW
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Figure 5B. Exploded View Of Parts Below Baseplate

1. Try a new 12AY7, 12AX7, 6AQ5, and 5Y3.

2. If still not within range, remove the chassis and connect a low capacity VTVM from test point "A" to chassis. Use low scale. Adjust trimmer M7 for maximum reading. Adjust trimmer M4 to obtain a reading of 2.25 volts. This provides the optimum in performance.

Neon Record Level Indicators-

The neon record indicator firing level adjustment is only required if a neon bulb is replaced. The two neon indicators are adjusted for correct firing level by means of two trimmer capacitors, one for each indicator.

To adjust indicators proceed as follows:

1. Turn recorder on and depress "Record" button.

2. Connect a short jumper lead across the bias oscillator coil, L1 (short out the coil to disable the oscillator).

3. Connect an audio oscillator, set at 1000 cycles, into the microphone input jack. Output of audio oscillator should be approximately .01 volt. (A1 volt output level may be used with a 100 to 1 reduction pad of resistors inserted between the audio oscillator and the microphone jack).

4. Connect probe of low capacity type AC VTVM to test point "B" (junction of two 330K resistors, R28 and R29 mounted on a terminal strip near the volume control).

5. Adjust volume control to obtain a reading of 36 volts on VTVM and leave control set and VTVM connected.

6. Disconnect shorting jumper from across bias oscillator coil.

7. Adjust "Normal" indicator trimmer M5A fully clockwise and then turn slowly counterclockwise so that upon loosening the trimmer the "Normal" bulb barely lights. This adjustment must be made loosening the trimmer.

8. Short out the bias oscillator coil.

9. Increase volume control to obtain a reading of 88 volts on the VTVM.

10. Remove short from bias oscillator coil

11. Adjust "Overload" indicator trimmer M5B as described in step "7" for just barely lighting the "Overload" indicator bulb.

IMPORTANT: Do not readjust the recording bias oscillator after setting the indicator light adjustments.

TROUBLES

Push Buttons Fail To Latch Into Position-

1. Lock plate spring (44) loose or broken, resulting in the lock plate not being held against the hinge bracket (41).

Fails To Erase-

1. Spring (52) loose or broken, resulting in the erase head (57) not being pulled forward to engage the tape.

2. Erase head not aligned properly. See "Erase Head Adjustment".

No Fast Forward Or Reverse-

1. Idler lever tension spring (78) may be loose or broken; if so, idler lever (138) will not be actuated.

2. Check idler drive belt (103) to see if it is properly connected.

No Drive On Record Or Playback-

1. Idler tension spring (154 or 160) loose or broken, thereby not holding idler wheel (144) in engagement with motor pulley (147) and flywheel (116).

2. Idler slide plate (162) binding on slide bushing (161), thus preventing idler wheel (144) from moving forward.

Tape Fails To Wind On Take-Up Reel During Record Or Playback-

1. Reel drive spring (20) loose or broken. See "Adjustment For Slow Take-Up Reel".

2. Brake drum shaft (118) binding. Clean foreign matter from bearing surface.

Speed Variation Or "Wow"-

1. Check the capstan (39), pinch roller (70), idler wheel (144), motor pulley (147), and flywheel (116) for oil or foreign material on their driving surfaces. Clean these parts with a good cleaning fluid.

2. Check motor pulley (147) to see if it is secured to motor shaft.

3. Check idler tension spring (154 and 160); see if they are holding idler wheel (144) in firm contact with motor pulley (147) and flywheel (116).

4. Idler slide plate (162) binding on slide bushing (161), preventing idler wheel (144) from making positive contact with the motor pulley and flywheel.

CLEANING

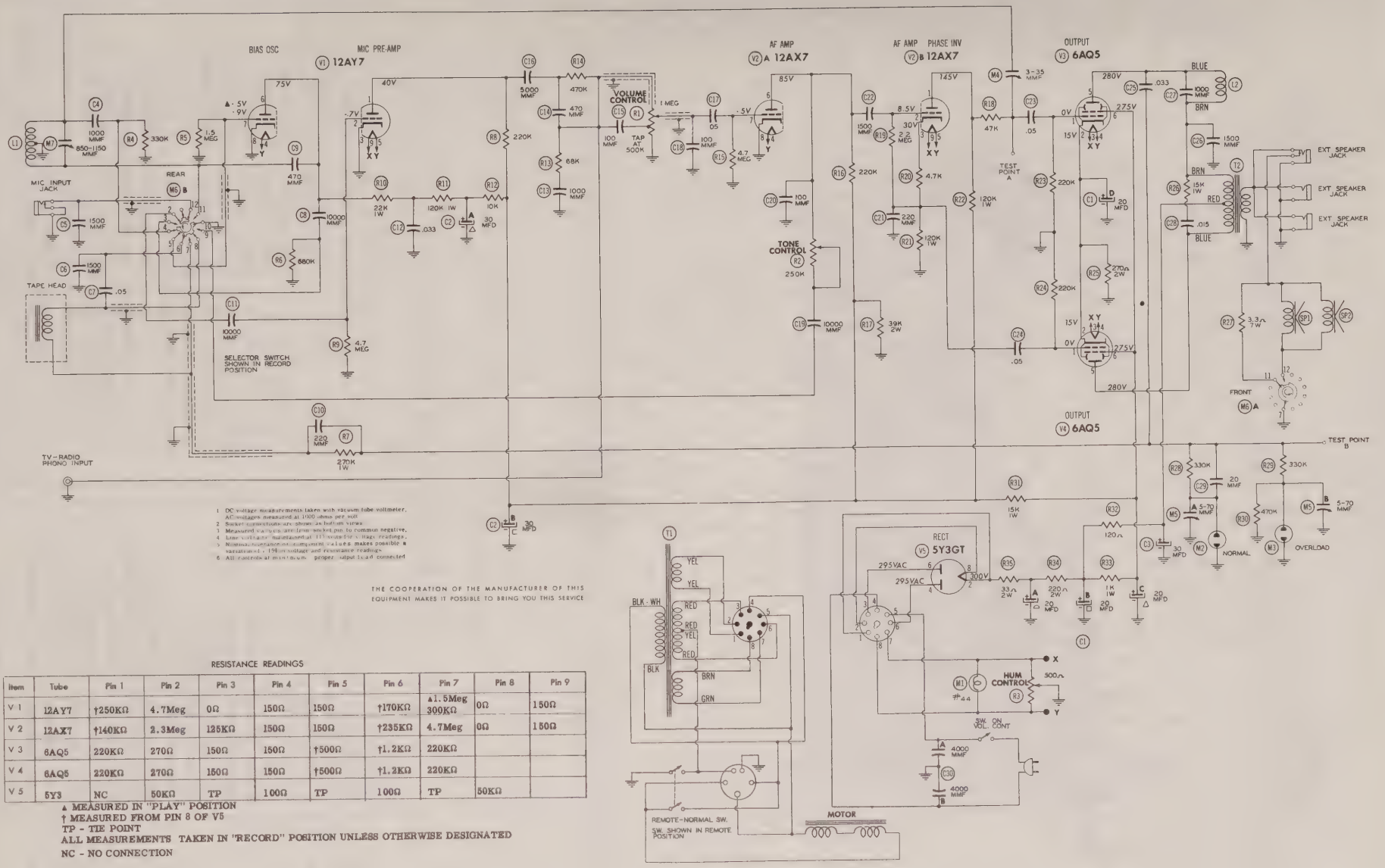
The record head (60), capstan (39), and pressure roller (70) are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts. Use a soft cloth and alcohol to clean the head surfaces, capstan and pressure roller.

CAUTION: Do not use a brush or any metal object when cleaning the recording head as this could mar the metal pole piece.

LUBRICATION

All rotating parts are provided with generous size oilite bearings, which are factory lubricated and require no further attention.

An occasional cleaning out of foreign matter under the plastic pushbutton cover is desirable, and a small drop of oil on the sliding lever members is advisable.



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AY7	†250KΩ	4.7Meg	0Ω	150Ω	150Ω	†170KΩ	▲1.5Meg 300KΩ	0Ω	150Ω
V 2	12AX7	†140KΩ	2.3Meg	125KΩ	150Ω	150Ω	†235KΩ	4.7Meg	0Ω	150Ω
V 3	6AQ5	220KΩ	270Ω	150Ω	150Ω	†500Ω	†1.2KΩ	220KΩ		
V 4	6AQ5	220KΩ	270Ω	150Ω	150Ω	†500Ω	†1.2KΩ	220KΩ		
V 5	5Y3	NC	50KΩ	TP	100Ω	TP	100Ω	TP	50KΩ	

▲ MEASURED IN "PLAY" POSITION
† MEASURED FROM PIN 8 OF V5
TP - TIE POINT
ALL MEASUREMENTS TAKEN IN "RECORD" POSITION UNLESS OTHERWISE DESIGNATED
NC - NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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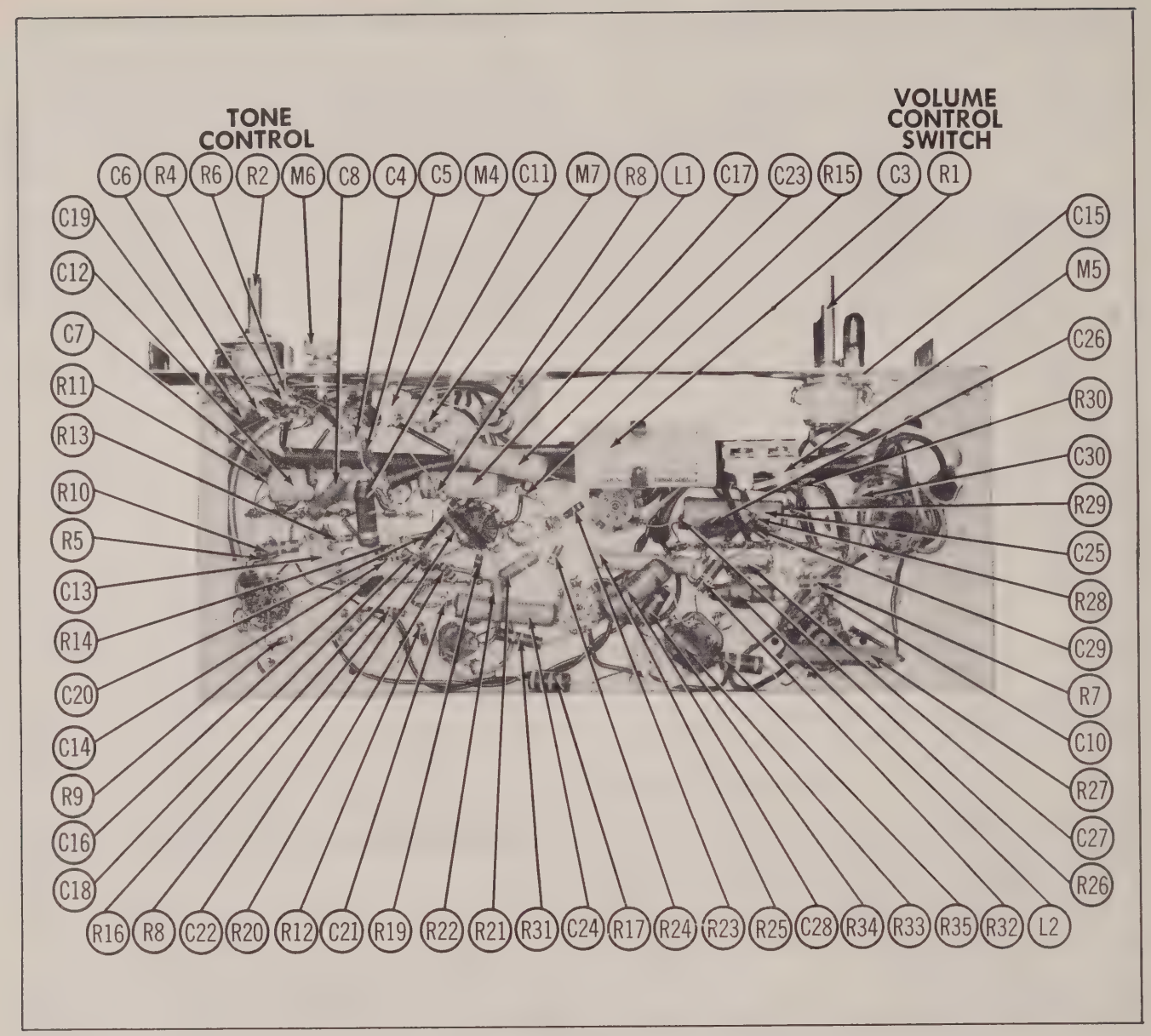
296-7

Schematic Diagram

KNIGHT
MODEL 96RX635

DENVER, COLORADO
3924 MEANE ST.
L. F. BLANKENSHIP



Bottom View Of Amp. Chassis

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
V1	69-2224	12AY7 Bias Osc. -Mic. Pre-Amp	C10	C-4. 109-27	Cap. Ceramic 220MMF
V2	69-2175	12AX7 AF Amp. -Phase Inv.	C11		Cap. Ceramic 10000MMF
V3	69-2171	6AQ5 Output	C12		Cap. Molded Paper . 033@600V.
V4	69-2171	6AQ5 Output	C13	C-4. 109-9	Cap. Ceramic 1000MMF
V5	69-2227	5Y3GT Rectifier	C14	C-4. 109-2	Cap. Ceramic 470MMF
C1A		Elect. 20MFD@450V.	C15	C-4. 109-10	Cap. Ceramic 100MMF
C1B		Elect. 20MFD@450V.	C16		Cap. Ceramic 5000MMF
C1C		Elect. 20MFD@450V.	C17	D-3. 100-18	Cap. Molded Paper. 05MFD@ 200V.
C1D		Elect. 20MFD@25V.	C18	C-4. 109-10	Cap. Ceramic 100MMF
C2A	B-5. 437	Elect. 30MFD@250V.	C19		Cap. Ceramic 10000MMF
C2B		Elect. 30MFD@250V.	C20	C-4. 109-10	Cap. Ceramic 100MMF
C2C		Elect. 30MFD@25V. Not Used	C21	C-4. 109-27	Cap. Ceramic 220MMF
C3		Elect. 30MFD@450V.	C22	C-4. 109-13	Cap. Ceramic 1500MMF
C4	C-4. 109-9	Cap. Ceramic 1000MMF	C23	D-3. 100-19	Cap. Molded Paper. 05MFD@ 400V.
C5	C-4. 109-13	Cap. Ceramic 1500MMF	C24	D-3. 100-19	Cap. Molded Paper. 05MFD@ 400V.
C6	C-4. 109-13	Cap. Ceramic 1500MMF	C25		Cap. Molded Paper. 033MFD@ 600V.
C7	D-3. 100-18	Cap. Molded Paper. 05MFD@ 200V.			
C8		Cap. Ceramic 10000MMF			
C9	C-4. 109-2	Cap. Ceramic 470MMF			

ELECTRICAL PART LIST-Con't

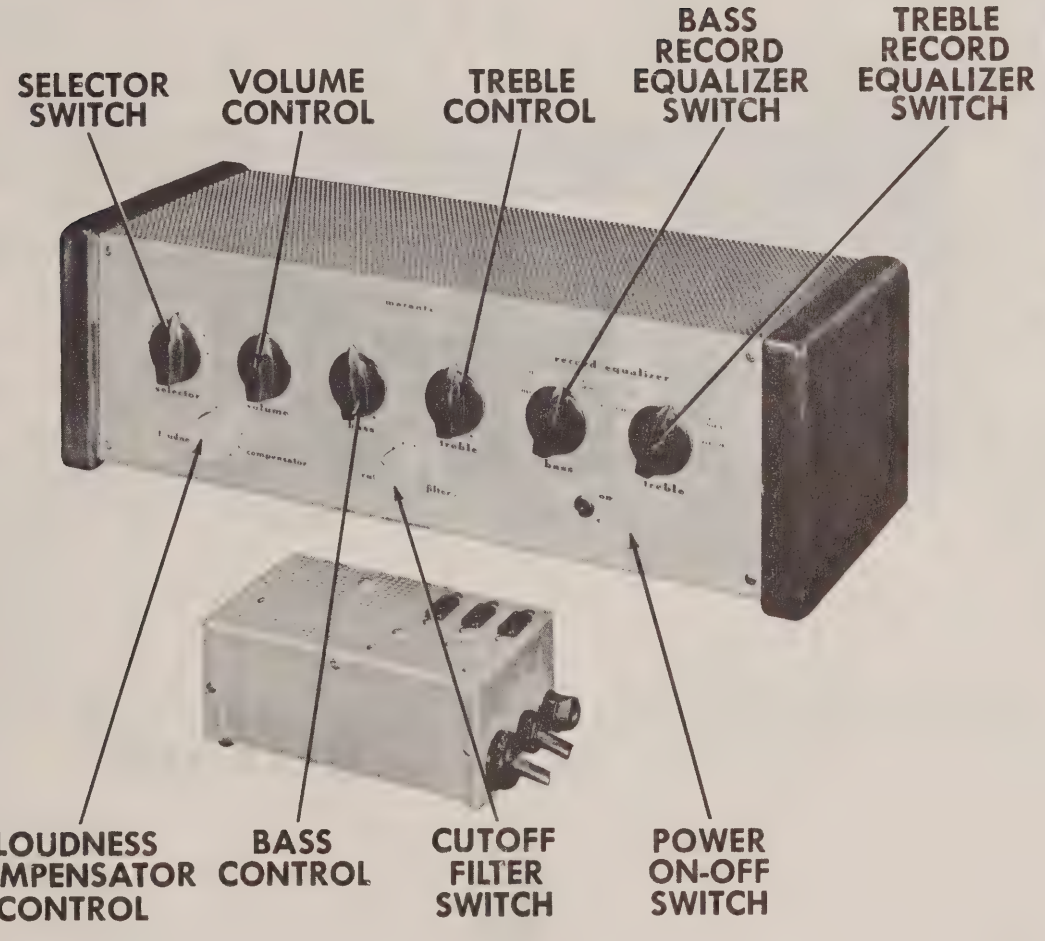
Ref. No.	Part No.	Description
C26	C-4.109-13	Cap. Ceramic 1500MMF
C27	C-4.109-9	Cap. Ceramic 1000MMF
C28	D-3.100-58	Cap. Molded Paper. 015MFD@ 600V.
C29	C-4.109-34	Cap. Ceramic 20MMF
C30A	B-4.131	Cap. Ceramic Dual Disc 4000MMF
C30B	B-4.131	Cap. Ceramic Dual Disc 4000MMF
R1	C-8.227-2	Vol. Cont. & Sw. Assy. 1Meg@ 1/2 W.
R2	C-8.231-1	Tone Cont. 250K@1/2 W.
R3	C-8.207-7	Hum Cont. 500Ω
R4	D-7.101-121	Resistor 330K@1/2 W.
R5		Resistor 1.5Meg@1/2 W.
R6	D-7.102-134	Resistor 680K@1/2 W.
R7	D-7.102-126	Resistor 270K@1 W.
R8	D-7.101-114	Resistor 220K@1/2 W.
R9	D-7.101-178	Resistor 4.7Meg@1/2 W.
R10	D-7.102-80	Resistor 22K@1 W.
R11	D-7.102-112	Resistor 120K@1 W.
R12	D-7.101-58	Resistor 10K@1/2 W.
R13	D-7.101-93	Resistor 68K@1/2 W.
R14	D-7.101-128	Resistor 470K@1/2 W.
R15	D-7.101-178	Resistor 4.7Meg@1/2 W.
R16	D-7.101-114	Resistor 220K@1/2 W.
R17	D-7.103-153	Resistor 39K@2 W.
R18	D-7.101-86	Resistor 47K@1/2 W.
R19	D-7.101-155	Resistor 2.2Meg@1/2 W.
R20	D-7.101-44	Resistor 4.7K@1/2 W.
R21	D-7.102-112	Resistor 120K@1W.
R22	D-7.102-112	Resistor 120K@1W.
R23	D-7.101-114	Resistor 220K@1/2 W.
R24	D-7.101-114	Resistor 220K@1/2 W.
R25	53-2825	Resistor 270Ω@2 W.
R26	D-7.102-72	Resistor 15K@1 W.
R27	C-6.215-10	Resistor 3.3Ω@7W.
R28	D-7.101-121	Resistor 330K@1/2 W.
R29	D-7.101-121	Resistor 330K@1/2 W.
R30	D-7.101-128	Resistor 470K@1/2 W.
R31	D-7.102-72	Resistor 15K@1 W.
R32		Resistor 120Ω@1/2 W.
R33	D-7.102-23	Resistor 1K@1 W.
R34	D-7.103-58	Resistor 220Ω@2W.
R35	D-7.103-23	Resistor 33Ω@2W.
T1	C-35.804A	Power Trans. & Plug Assy.
T2	C-9.261C	Output Trans.
SP1	C-30.341-2	Speaker 8Ω PM
SP2	D-30.341-2	Speaker 8ΩPM
L1	B-1.557	Bias Osc. Coil
L2	B-1.556	Tone Choke
M1	45-2003	Pilot Lamp #44
M2	45-2036-0	Neon Lamp NE51 (Normal Ind.)
M3	45-2036-0	Neon Lamp NE51(Overload Ind)
M4	C-4.142A	Trimmer Bias Adj. (3-35MMF)
M5A	B-4.140	Trimmer Normal Ind. (5.70MMF
M5B	B-4.140	Trimmer Overload Ind. (5-70MMF)
M6A		Play-Record Sw. (Viewed From Rear)
M6B		Play-Record Sw. (Viewed From Front)
M7	C-4.142A	Trimmer, Bias Osc. Freq. Adj. (850-1150MMF)

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	C-13.253-4E	Speed Shift Knob
2	57-2049-4	Screw #6-32 x 1/4BHMS
3	73-2334-1	#6 Cantlink Washer
4	B-13.261-1	Reel Pan For Feed Reel
5	B-28.163	Linen Washer
6	D-13.292-2F	Rear Escutcheon
7	57-3445-1	#8-32 x 3/8Phillips RHMS
8	C-13.254-7E	Tone Control Knob
9	73-2254-3	Felt Washer
10	E-13.293-3F	Front Escutcheon
11	48-2213-1	Hex. Nut 3/8-32 x 1/2
12	B-19.985-1A	Bracket for Input Jack
13	B-33.453	Midget Jack
14	54-2030-35	Drilled Rivet 1/4 x 122 x 7/32
15	B-33.370	Phono Jack
16	73-2254-3	Felt Washer
17	57-2552-2	Screw 6-32 x 1 1/4Phillips RHMS
18	B-13.262-1	Reel Pan for Take-Up Reel
19	57-3678-1	#4-40 x 5/16 Phillips OHMS
20	B-31.351	Reel Drive Spring (Belt)
21	B-32.302	Timer Knob
22	73-2231-3	#4 Internal Lockwasher
23	57-2552-1	#6-32 x 1 1/4PhillipsRHMS
24	73-2334-1	#6-Cantlink Washer
25	35-851	Timer Shaft and Pointer Assy.
26	B-19.975-3B	Rear Escutcheon Plate
27	B-32.308-1	Record Lock Button
28	57-2109-2	#6-32 3/16BHMS Brz. Phillips
29	33.415	"E" Ring Retainer
30	54-2030-35	Drilled Rivet 1/4 x 122 x 7/32
31	73-2231-5	#8Int. Lockwasher
32	48-410-1	#6-32Hex. Nut
33	73-2234-3	#6-Ext. Lockwasher
34	48-410-1	#6-32 Hex. Nut.
35	73-2234-3	#6 Ext. Lockwasher
36	B-19.876D	Push Button Lever
37	B-33.446	Spacer
38	D-35.807-6F	Base Plate Assy.
39	B-32.259F	Capstan Shaft
40	B-31.337B	Push Button Return Spring
41	B-19.859-1F	Hinge Bracket for Push Buttons
42	57-3445-1	#8-32 x 3/8 RHMS
43	B-19.870A	Locking Plate for Push Button
44	B-31.343A	Lock Plate Spring
45	73-2231-4	#6-Int. Lockwasher
46	57-3603-1	#6-32 x 1/2 Phillips BHMS
47	57-3439-0	#6-32 x 3/16 Bristol Head Set Screw
48	B-32.300D	Tape Guide Post (Left)
49		6-32 Hex. Nut
50	B-32.260D	Tape Guide Post Spacer
51	B-35.794	Erase Head Plate Assembly
52	B-31.347B	Erase Head Tension Spring
53	B-31.334A	Pressure Pad (Felt)2 used
54	57-428-1	#6-32 x 3/8 RHMS
55	73-2233-1	Int. Lockwasher
56	48-2216-1	#2-56 x 3/16Hex. Nut
57	C-35.756A	Erase Head
58	B-35.766C	Record Actuating Lever
59	B-32.309	Tape Guide Post (Right)

Ref. No.	Part No.	Description
60	C-36.156B	Tape Recording Head(Shure TR16H)
61	B-19.881C	Playback Actuating Lever
62	73-2241-148F	Flat Washer
63	B-31.336D	Pinch Roller Tension Spring
64	B-35.758	Playback Slide Plate Assembly
65	B-35.764D	Pressure Pad Spring Assembly
66	B-33.412	Push-On Stud Nut, 3/16"Stud
67	B-19.868A	Record Slide Plate
68	B-33.409	Hairpin Clip
69	73-2340	Linen Washer
70	B-33.404E	Pinch Roller
71	B-19.858	Push Button Retainer Bracket
72	73-2340	Linen Washer
73	B-35.824A	Pinch Roller Plate Assy.
74	110-48-B	Switch Lever Assy.
75	B-31.338B	Brake Return Spring
76	C-35.835	Brake Slide Plate Assembly
77	B-33.412	Push-On-Stud Nut, 3/16 Stud
78	B-31.339	Idler Lever Tension Spring
79	B-35.759	Shift Plate Assembly
80	B-35.774	Record Interlock Assembly
81	B-31.333	Switch Arm Link
82	73-2241-118	Flat Washer
83	54-2030-35	Drilled Rivet 1/4 x 122 x 7/32
84		(Bottom View of Item 38)
85	73-2231-5	#8 Int. Lockwasher
86	57-2102-3	#8-32 x 1/4 RHMS
87	B-19.863	Drive Mounting Plate Bracket
88	D-33.445	Gear Train for Tape Index
89	B-32.301	Brake Drum Shaft (Grooved)
90	B-28.163	Linen Washer
91	C-35.823	Brake Drum & Bushing Assy.
92	B-35.757D	Sub. Idler Plate Assy.
93	B-32.275-1E	#8-32 HH Shoulder Screw
94	B-35.405E	Sub. Idler Wheel
95	73-2254-6	Felt Washer
96	73-2241-150	Flat Washer
97	B-33.409	Hairpin Clip
98	B-33.118A	Spacer
99	73-2241-150	Flat Washer
100	B-33.418	Truearc Retaining "E" ring
101	73-2254-6	Felt Washer
102	B-33.406C	Idler Drive Sheave
103	B-28.162	Idler Drive Belt
104	C-35.816	Speed Control Shaft Assy.
105	57-3589-1	8-32 x 1/4Bristol Head Set Screw
106	57-2109-2	#6-32 x 3/16Phillips BHMS
107	57-3679-1	#6-32 x 7/8 Phillips BHMS
108	57-3589-1	#8-32 x 1/4 Bristol Hd. Set Screw
109	B-35.755-5D	Push Button Assy.
110	D-35.753-1	Drive Mounting Plate Assy.
111	73-2231-5	Internal Lockwasher
112	57-2102-3	#8-32 x 1/4 RHMS
113	B-28-159	Shock Mount
114	B-19-840E	Steady Bracket
115	B-23.163	Linen Washer
116	C-13.257-1C	Flywheel
117	B-28.163	Linen Washer
118	B-32.297B	Brake Drum Shaft
119		Erase Head Forward Adjustment Screw
120	73-2231-5	Internal Lockwasher
121	57-2102-3	#8-32 x 1/4 RHMS
122	B-19.862C	Angle Bracket for Mounting Drive Assy.
123	C-19.837F	Motor Adapter Plate
124	73-2231-5	#8 Int. Lockwasher
125	57-2102-3	#8-32 x 1/4 RHMS
126	B-33.411A	Flat Washer
127	73-2231-5	#8 Internal Lockwasher
128	48-409-1	8-32 x 5/16 Hex. Nut
129	D-36.153E	Motor, Round Type(Fasco)Motor,
	D-36.154G	Square Type(GI and Alliance)
130	B-33.418	Truearc Retaining"E" Ring
131	73-2241-143	Flat Washer
132	73-2254-3	Felt Washer
133	C-19.887A	Fan Blade
134	73-2254-3	Felt Washer
135	73-2241-143	Flat Washer
136	33.415	Push-On Fastener
138	35.834	Idler Lever Assy.
139	97-3062	Brake Spring
140	B-31.335A	Brake Pad, Felt
141	57.3683-1	8-32 x 1/4Undercut Flat Head
142	B-33.409	Hairpin Clip
143	B-28.163	Linen Washer
144	B-33.408C	Rubber Bonded Idler Wheel, 2 1/2" Dia.
145	B-28.163	Linen Washer
146	B-31.327D	Idler Lift Compression Spring
147	B-32.288D	Motor Pulley
148	57-2102-3	#8-32 x 1/4 RHMS
149	73-2231-5	#8 Internal Lockwasher
150	73-2241-143	Flat Washer
151	110-47	Idler-Throw-Out Lever
152	B-32.291	Shoulder Washer
154	B-31.324A	Idler Spring (Tension)
155	57-2109-2	#6-32 x 3/16Phillips BHMS
156	B-19.961	Speed Control Shaft Detent Spring
157	B-33.407-1	"C" Washer
158	51-3182	Shift Plate for High Speed
159	57-2109-2	#6-32-3/16 Phillips BHMS
160	B-31.324A	Idler Spring (Tension)
161	B-32.264F	Idler Slide Bushing
162	B-35.768A	Idler Slide Plate Assy.
163	57-3589-1	#8-32 x 1/4 Bristol Hd. Set Screw

MARANTZ
MODEL "Audio Consolette"



MARANTZ
MODEL "Audio Consolette"

TRADE NAME	Marantz Model "Audio Consolette"
MANUFACTURER	Marantz Co., 44-15 Vernon Blvd., Long Island City 1, N. Y.
TYPE SET	AC Operated Six Channel Audio Preamplifier & Equalizer
TUBES (Three)	Types 12AX7 Preamp., 12AU7 AF Amp., 12AX7 AF Amp.
POWER SUPPLY	110-120 Volts AC-50/60 Cycles
RATING	.19 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MARANTZ PART No.	STANDARD REPLACEMENT		
V1	Preamp.	12AX7	12AX7	9A	
V2	AF Amp.	12AU7	12AU7	9A	
V3	AF Amp.	12AX7	12AX7	9A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	MARANTZ PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1	10	500		TC81	TD-10-500	MT-4710	
C2A	▲40	350					
B	◓40	350					
C	■40	350					
C3A	◓40	350					
B	■40	350					
C	▲40	350					
C4	100	6		TC2501	TD-100-6	MTH-0610	
C5	100	6		TC2501	TD-100-L	MTH-0610	
C6A	▲500	30					
B	◓500	30					
C7	100	6		TC2501	TD-100-6	MTH-0610	

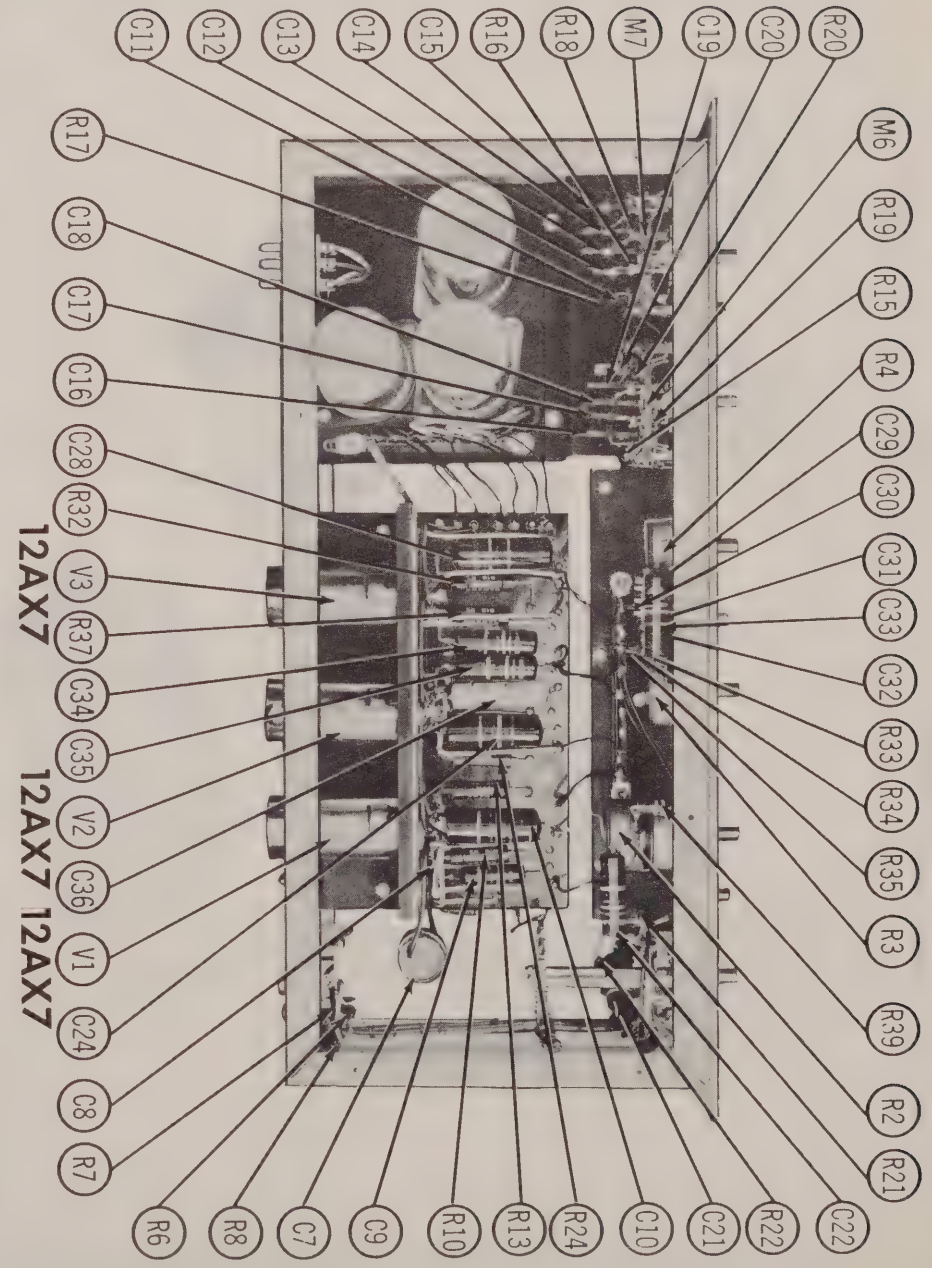
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	MARANTZ PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	
C8	10			D6-100	GPIK-100	UC-541	Note 1
C9	.01	400		D6-103	GP3-333-103	PT411	
C10	.1	400		DF-104		PT401	
C11	120			TCZ-120			
C12	310						
C13	380						
C14	500					MCE245	
C15	640						
C16	2700						
C17	1950						
C18	1600						
C19	1950						
C20	1000	500				MCE255	
C21	.1	200		DF-104		PT401	
C22	.022	400		DF-203		PT4122	
C23	.0039	400					
C24	.1	400		DF-104		PT401	
C25	150	500		TCZ-150	NPO-334-151	MCE236	
C26	.022	200					
C27	1000	500				MCE255	
C28	.1	400		DF-104		PT401	
C29	220	500		TCZ-220	NPO-335-221		
C30	.0039	400					
C31	1000	500				MCE255	Note 2
C32	500	500				MCE245	Note 2
C33	.022	200					
C34	.022	400		DF-203		PT4122	
C35	.022	400		DF-203		PT4122	
C36	.33	200					
C37	.0022	400					
C38	.0022	400					
C39	.0068	400					

Note 1. Some versions may use a 100MMF capacitor in this application.
Note 2. When C31 is 1500MMF, C32 is not used.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MARANTZ PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½		QU-127	A47-1Meg-S	B-59		Loudness Compensator
B	Shaft			PQ	RS-3	Not Req.		Attach to R1A.
R2A	1. 5Meg	½					UF155A	Volume (Panel)
B	1Meg	½					UR16A	Attach to R2A (Rear).
C	Shaft						DS-36	Attach to R2A.
R3	1Meg	½				B-70		Bass
R4	1Meg	½				B-70		Treble

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MARANTZ PART No.	IRC PART No.	
R5	1MegΩ 5%	½		BTS-1Meg5%	Note 2
R6	50KΩ 5%	½		BTS-51K 5%	
R7	10KΩ 5%	½		BTS-10K 5%	
R8	20KΩ 5%	½		BTS-20K 5%	
R9	5000Ω 5%	1			
R10	250KΩ 5%	½			
R11	1Meg 5%	½		BTS-1Meg	
R12	2000Ω 5%	½		BTS-2000	
R13	100KΩ 5%	1		BTA-100K	
R14	47KΩ	½		BTS-47K	
R15	1Meg	½		BTS-1Meg	
R16	200KΩ 5%	½		BTS-200K 5%	
R17	100KΩ	½		BTS-100K	
R18	560KΩ	½		BTS-560K	
R19	4. 7Meg	½		BTS-4. 7Meg	
R20	1. 5Meg	½		BTS -1. 5Meg	
R21	2. 2Meg	½		BTS-2. 2Meg	
R22	4. 7Meg	½		BTS-4. 7Meg	
R23	5000Ω 5%	1			
R24	100KΩ 5%	1		BTA-100K 5%	
R25	12KΩ	½		BTS-12K	
R26	100KΩ	½		BTS-100K	
R27	560KΩ	1		BTA-560K	
R28	470KΩ	1		BTA-470K	
R29	12KΩ	1		BTA-12K	
R30	10KΩ	1		BTA-10K	
R31	30000 5%	½		BTS-3000 5%	
R32	100KΩ 5%	1		BTA-100K 5%	
R33	330KΩ	1		BTA-330K	Note 1
R34	1. 5Meg	½		BTS-1. 5Meg	Note 3
R35	18KΩ	1		BTA-18K	
R36	2500Ω 5%	½			
R37	250KΩ 5%	1			
R38	6800Ω	½		BTS-6800	
R39	82KΩ	1		BTA-82K	
R40	1Meg	1		BTA-1Meg	
R41	3300Ω	1		BTA-3300	
R42	50KΩ 5%	1		BTA-3300	
R43	1. 5Meg	½		BTS-1. 5Meg	
R44	10KΩ	½		BTS-10K	
R45	6800Ω	½		BTS-6800	
R46	4700Ω	½		BTS-4700	
R47	1. 5Meg	½		BTS-1. 5Meg	Note 3
R48	39KΩ	½		BTS-39K	
R49	27KΩ	½		BTS-27K	
R50	20KΩ 5%	½		BTS-20K 5%	
R51	4700Ω	½		BTS-4700	
R52	3300Ω	1		BTS-3300	
R53	6. 8Ω	1			
R54	20Ω	4		1 3/4 A-20	

Note 1. Some versions use a 270KΩ resistor in this application.
Note 2. Not used in some versions.
Note 3. Some versions use a 1Meg resistor in this application.

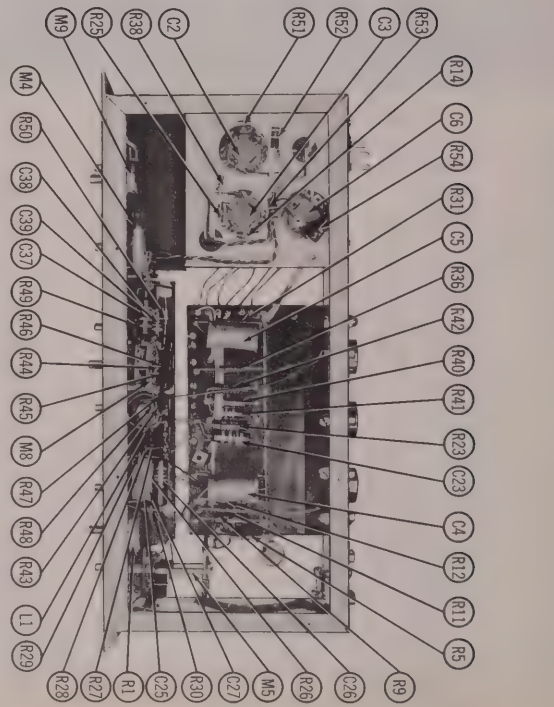
TRANSFORMER (POWER)

ITEM No	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MARANTZ PART No.	Halldorson PART No.	Merit PART No	Stancor PART No.	Thordarson PART No	Triad PART No
T1	117V ~ 19A	490VCT 008ADC	24VAC 300ADC							

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MARANTZ PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Audio Filter	44Ω						

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA MARANTZ PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.008ADC					16Y1 ①		① Use 4 units, 2 in series for each half.
M2	.300ADC		1016				304B	

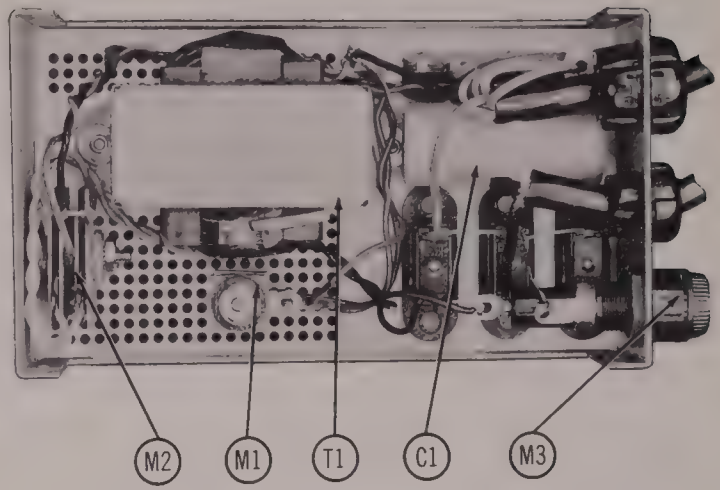
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MARANTZ PART No. FUSE	MARANTZ PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	1/4A 250V			312. 250 (3AG 1/4A)	342001	AGC 1/4	HKP

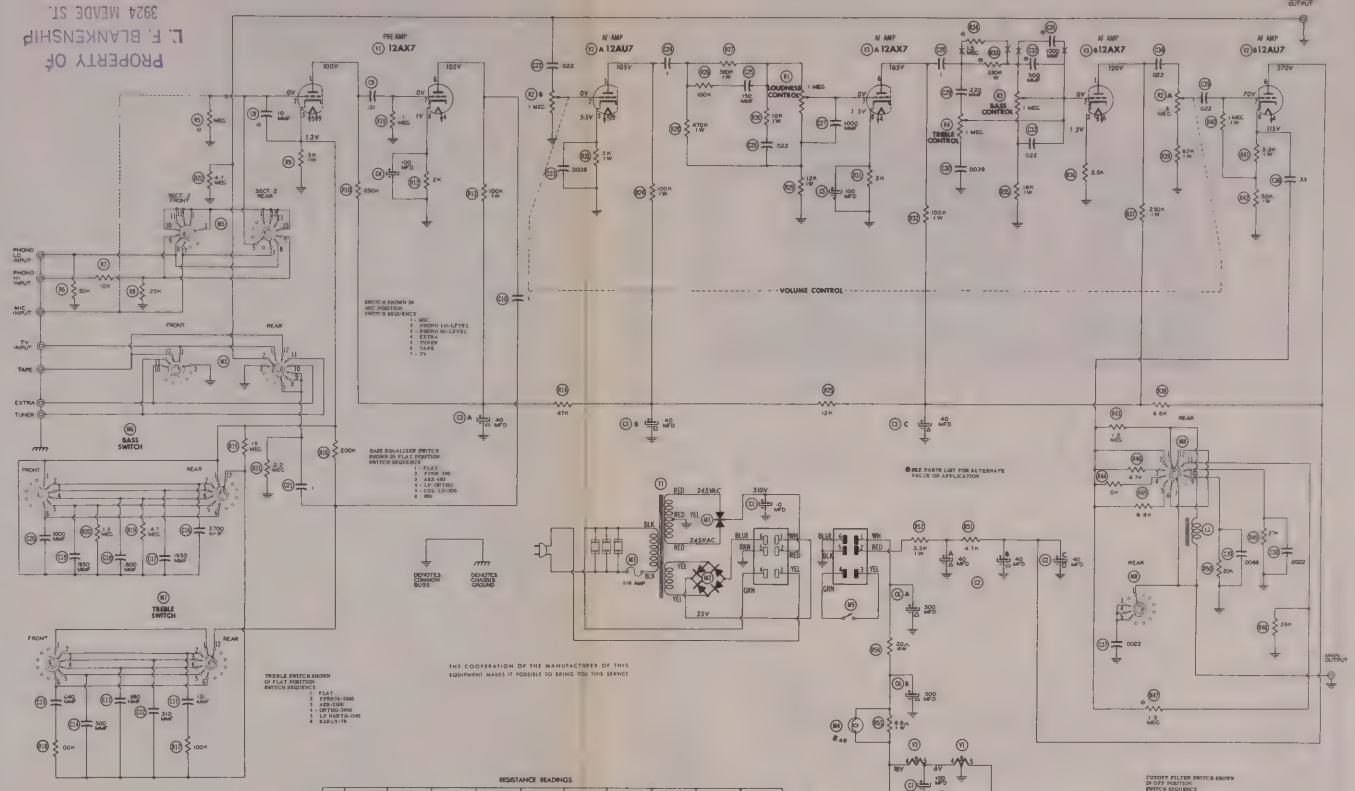
MISCELLANEOUS

ITEM No.	PART NAME	MARANTZ PART No.	NOTES
M4	Pilot Light		#49
M5	Switch		Selector (Rotary-Wafer Type)
M6	Switch		Record Equalizer (Bass) Rotary-Wafer Type
M7	Switch		Record Equalizer (Treble) Rotary-Wafer Type
M8	Switch		Cut-off filter (Rotary-Wafer Type)
M9	Switch		Power (On-Off)

POWER SUPPLY–BOTTOM VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†234KΩ	1Meg	8KΩ	10Ω	10Ω	†174KΩ	1Meg	2KΩ	0Ω
V 2	12AU7	†126KΩ	10Ω	5KΩ	10Ω	10Ω	†8KΩ	1Meg	53.3KΩ	10Ω
V 3	12AX7	†264KΩ	18KΩ	2. 5KΩ	10Ω	10Ω	†114KΩ	12KΩ	2KΩ	10Ω

ALL MEASUREMENTS WITH SELECTOR SWITCH IN MICR. POSITION.
† MEASURED FROM POSITIVE TERMINAL OF C1 (INPUT FILTER CAPACITOR).

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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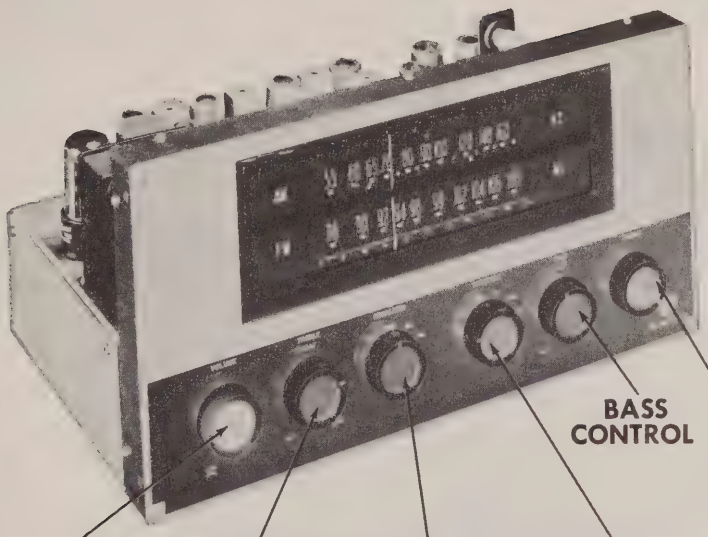
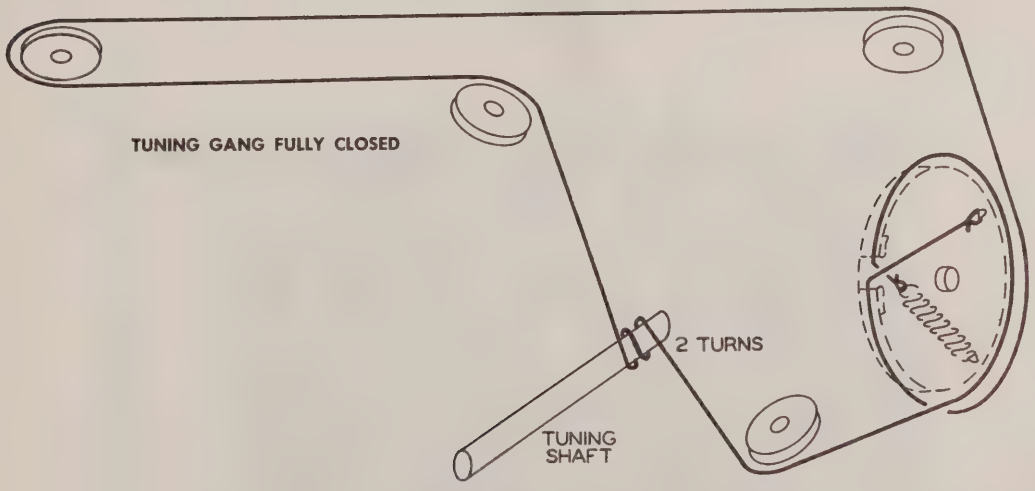
DENVER, COLORADO

PILOT
MODEL AF-825



TRADE NAME	Pilot Model AF-825	
MANUFACTURER	Pilot Radio Corp., 37-06 36th. St., Long Island City 1, N.Y.	
TYPE SET	AC Operated AM-FM Superheterodyne Tuner With Equalizer Pre-Amplifier	
TUBES	Eleven	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING .55 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540KC-1700KC	FREQ. MOD. 88MC-108MC



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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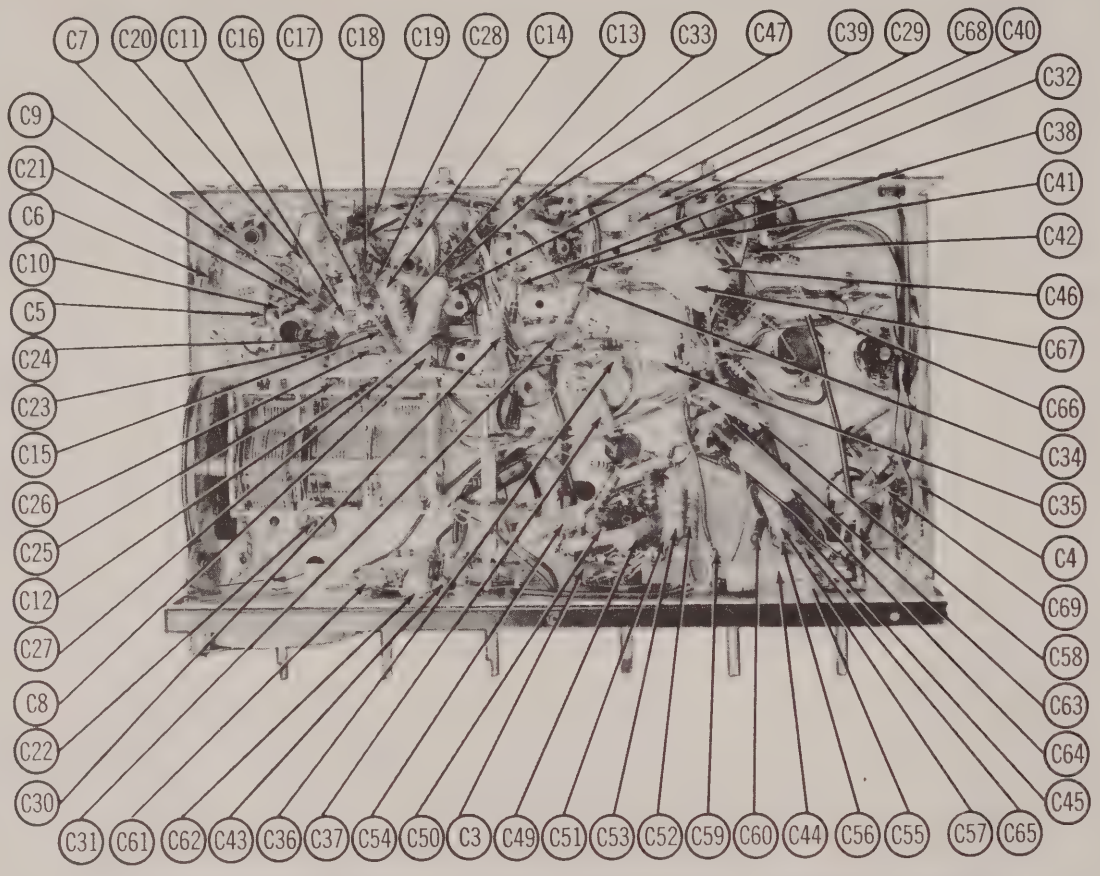
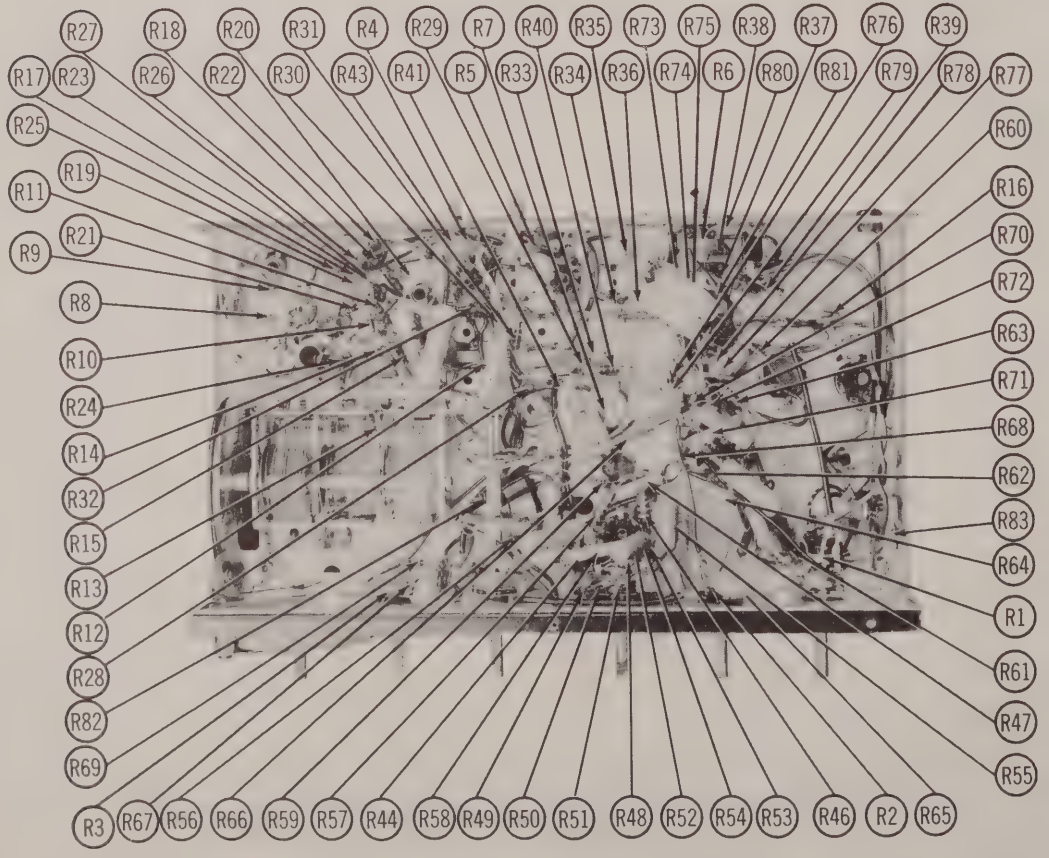
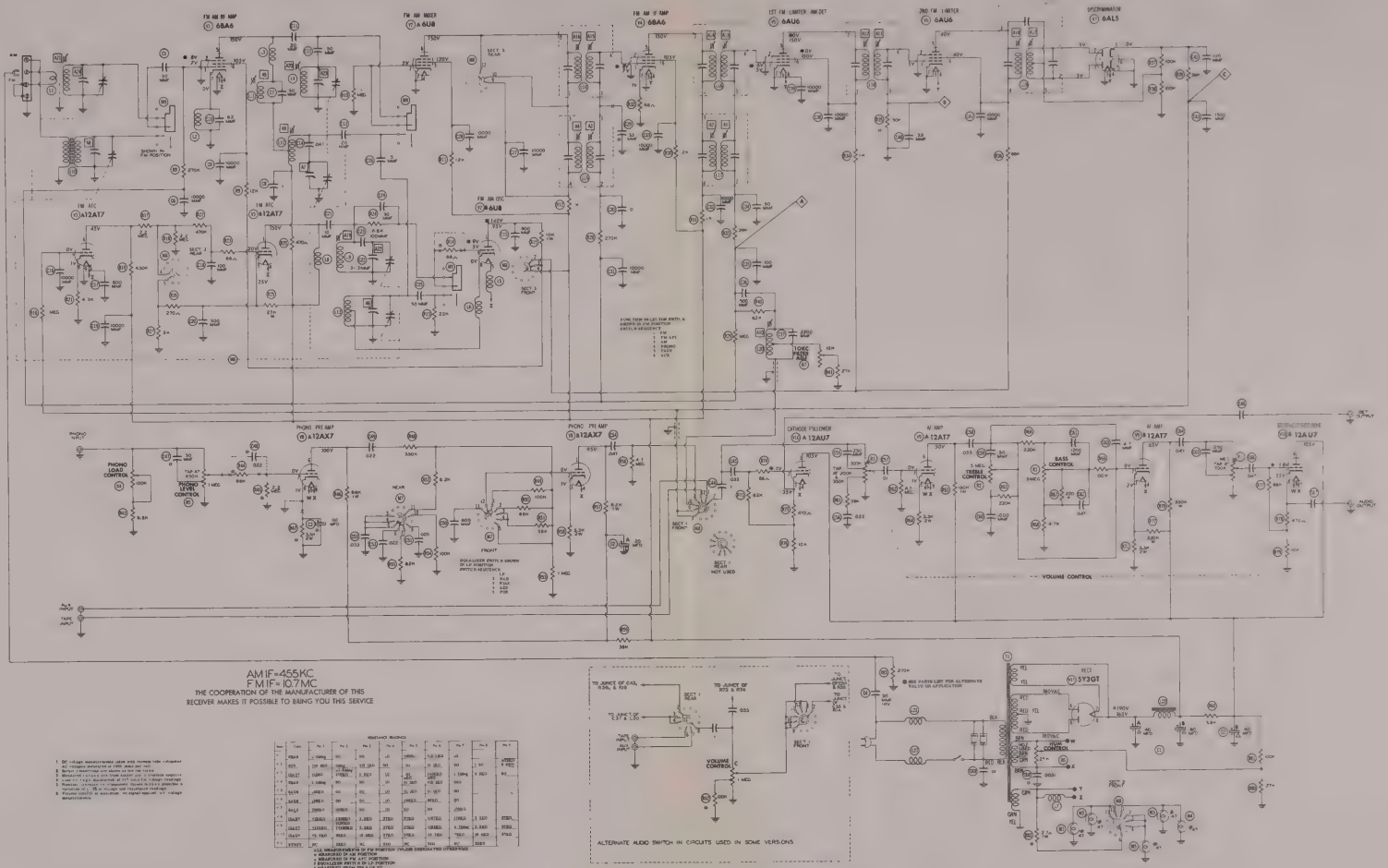
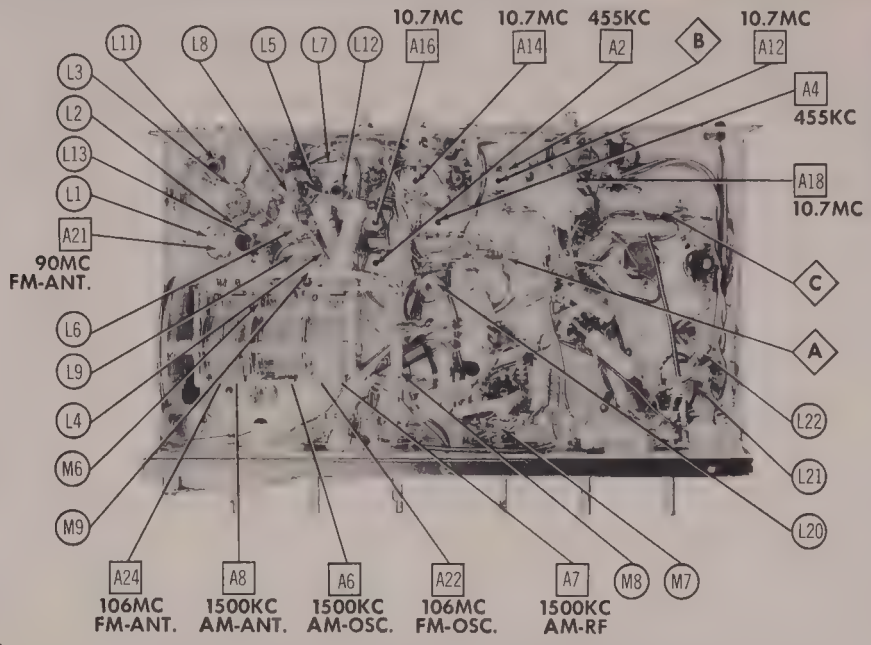


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

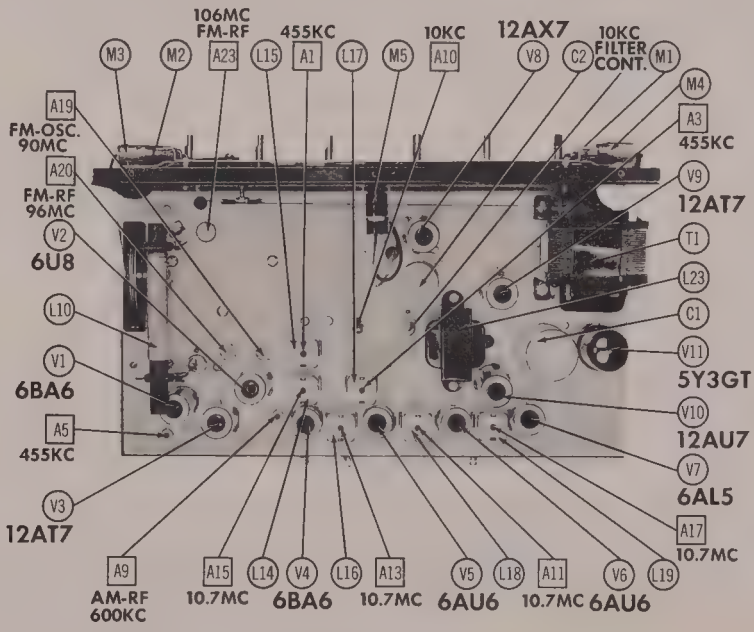


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION


AM IF=455KC
FM IF= 10.7MC
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
ALTERNATE AUDIO SWITCH IN CIRCUITS USED IN SOME VERSIONS
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1955
296-9



CHASSIS BOTTOM VIEW ALIGNMENT IDENTIFICATION



CHASSIS TOP VIEW

DENVER, COLORADO.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Allow 30 minute warm-up for tuner and test equipment.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	455KC (400~Mod)	AM	55	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	200MMF	High side to AM antenna terminal. Low side to chassis.	"	"	"	"	A5	Adjust for minimum deflection.
3.	"	"	1500KC	"	150	"	A6, A7, A8	Adjust for maximum deflection.
4.	"	"	600KC	"	60	"	A9	Adjust for maximum deflection while rocking tuning gang.

WHISTLE FILTER ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.		High side to point (A). Low side to chassis.	10KC	AM	55	AC probe to audio output. Common to chassis.	A10, R7 (whistle filter control)	Adjust for MINIMUM deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (Unmod)	FM	88	DC probe to point (B). Common to chassis.	A-11 thru A16	Adjust for maximum deflection.
7.	"	"	"	"	"	DC probe to point (C). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
8.	"	"	"	"	"	"	A18	Adjust for maximum deflection. Recheck A17.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	88	Vert. Amp. to point (B). Low side to chassis.	A-11 thru A16, A18	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
7.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A17	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A18 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω Carbon Resistors	High side to FM antenna terminals. Low side to chassis.	90MC (AFC off)	FM	90	DC probe to point (A). Common to chassis.	A19, A20, A21	Adjust for maximum deflection.
10.	"	"	106MC	"	"	"	A22, A23 A24	"

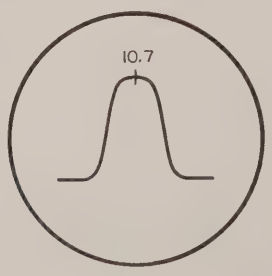


FIG. 1

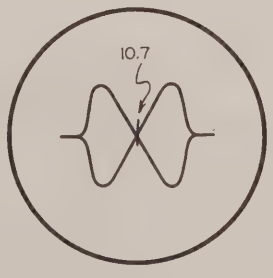


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: PILOT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	FM/AM RF Amp.	6BA6	6BA6	7BK	
V2	FM/AM Mixer-Osc.	6U8	6U8	9AE	
V3	FM AFC	12AT7	12AT7	9A	
V4	FM/AM IF Amp.	6BA6	6BA6	7BK	
V5	1st. FM Limiter-AM Detector	6AU6	6AU6	7BK	
V6	2nd. FM Limiter	6AU6	6AU6	7BK	
V7	Discriminator	6AL5	6AL5	6BT	
V8	Phono Pre-Amp.	12AX7	12AX7	9A	
V9	AFC-AF Amp.	12AT7	12AT7	9A	
V10	Cathode Follower-Rectifier	12AU7	12AU7	9A	
V11		5Y3GT	5Y3GT	5T	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: PILOT PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: PYRAMID PART No.	REPLACEMENT DATA: SANGAMO PART No.	NOTES
C1A	▲40	250		FP227.5	TM-8040-450	D-140	
B	▲80	250					
C2A	■20	250		FP319.8	TM-4020-250	T-435	
B	▲40	250					
C3	100	6		TC2501	TD-100-6	MTH-0610	Note 1

Note 1. Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: PILOT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	NOTES
C4	30	1000				MCM433	
C5	50			D6-500	831-500	UC-545	
C6	10000			DD-103	811-01	DC-511	
C7	50			TCZ-50	NP0-338-500	ZT-545	
C8	.1	400		DF-104		PT401	
C9	10000			DD-103	811-01	DC-511	
C10	82			D6-820	GP1K-820		
C11	20			TCZ-20	NP0K-200	ZT-542	
C12	50			TCZ-50	NP0-338-500	ZT-545	
C13	20			TCZ-20	NP0K-200	ZT-542	
C14	.047	400		DF-503		PT4147	
C15	800			DD-801	811-821	MC451	
C16	10000			DD-103	811-01	DC-511	
C17	800			DD-801	811-821	MC451	
C18	100			TCZ-100	NP0-337-101	ZT-531	
C19	10000			DD-103	811-01	DC-511	
C20	500			D6-501	811-501	UC-535	
C21	10			TCL-10			
C22	3-12			827B	TS2A-3	ST-553-Z	
C23	100			TCZ-100	NP0-337-101	ZT-531	
C24	30			TCN-30	N750K-300		
C25	50			TCZ-50	NP0-338-500	UC-545	
C26	5			TCZ-4R7	NP0A-050	ZT-555	
C27	10000			DD-103	811-01	DC-511	
C28	10000			DD-103	811-01	DC-511	
C29	33			D6-330	831-330	UC-5433	Note 1
C30	.01	400		D6-103	GP3-333-103	PT411	
C31	10000			DD-103	811-01	DC-511	Note 2
C32	10000			DD-103	811-01	DC-511	
C33	10000			DD-103	811-01	DC-511	
C34	50			D6-500	831-500	UC-545	
C35	100			D6-101	801-101	UC-531	
C36	500			D6-501	811-501	UC-535	
C37	2200	500					
C38	10000			DD-103	811-01	DC-511	
C39	10000			DD-103	811-01	DC-511	
C40	33			D6-330	831-330	UC-5433	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: PILOT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	NOTES
C41	10000			DD-103	811-01	DC-511	
C42	100			D6-101	801-101	UC-531	
C43	1500			D6-152	811-152	DC-5215	
C44	.1	400		DF-104		PT401	
C45	.033	400		DF-303		PT4133	
C46	.1	200		DF-104		PT401	
C47	50			D6-500	811-501	UC-545	Note 3
C48	.022			DF-203	817-02	PT4122	Note 1
C49	.022	400		DF-203	817-02	PT4122	
C50	800			D6-801	811-821		
C51	.0051	400		D6-502	GP2-333-502	UC-525	
C52	.022	400		DF-203	817-02	PT4122	
C53	.033	400		DF-303		PT4133	
C54	.047	400		DF-503		PT4147	
C55	250			D6-251	811-251	UC-5325	
C56	.022	400		DF-203	817-02	PT4122	
C57	.01	400		D6-103	GP2-333-103	PT411	
C58	.033	400		DF-303		PT4133	
C59	50			D6-500	831-500	UC-545	
C60	1000			D6-102	811-102	UC-521	
C61	1200			D6-122	811-122	UC-5212	
C62	.047	400		DF-503		PT4147	
C63	4.7			TCZ-4R7	NP0A-4R7	ZT-5547	
C64	.047	400		DF-503		PT4147	
C65	250			D6-251	811-251	UC-5325	
C66	.047	400		DF-503		PT4147	
C67	.1	200		DF-104		PT401	
C68	.0051	400		D6-502	GP2-333-502	PT625	Note 4
C69	.01	600		D6-103	GP3-333-103	PT611	

Note 1. Not used in some versions.
Note 2. Some versions may use a .047MFD capacitor in this application.
Note 3. Some versions may use a 33MMF capacitor in this application.
Note 4. Some versions may use a .022MFD capacitor in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PILOT PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36-60					Volume-Tapped @ 200KΩ and 350KΩ-Panel
B	1Meg	½						Volume-Tapped @ 700KΩ-rear
C	Switch							Attach to R1B
R1A	1Meg	½	36-50					Volume-Panel }
B	500KΩ	½						Volume-center } Note 1
C	1Meg	½						Volume-rear }
R2A	5Meg	½	37-33	Q13-141	A47-5Meg-Z	AB-88	U-65	Treble
B	Shaft		Not Req.	Not Req.	FS-3	AK-3	Not Req.	Attach to R2A
R3A	5Meg	½	37-33	Q13-141	A47-5Meg-Z	AB-88	U-65	Bass
B	Shaft		Not Req.	Not Req.	FS-3	AK-3	Not Req.	Attach to R3A
R4A	100KΩ	½	39-32C	Q11-128	A47-100K-S	AB-40	U-41	Phono Load
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	1Meg	½	39-41A	Q19-137X	A47F5-1Meg	ABT-74		Phono Level - Tapped @ 650KΩ
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1		Attach to R5A
R6A	25KΩ	½	39-33A	Q11-120	A47-25K-S	AB-26	SU-29	Hum Balance
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	10KΩ	½	39-38	Q11-116	A47-10K-S	B-14	U-20	10KC Filter Adj.
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R7A

Note 1. Used in some versions. (Alternate Part).

PROPERTY OF
L. F. DUMONT SHIP
2307 MAIN ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA PILOT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R8	270KΩ	½		BTS-270K	
R9	12KΩ	½		BTS-12K	
R10	1Meg	½		BTS-1Meg	
R11	12KΩ	½		BTS-12K	
R12	1000Ω	½		BTS-1000	
R13	22KΩ	½		BTS-22K	
R14	68Ω	½		BTS-68	Note 1
R15	10KΩ	1		BTA-10K	
R16	1Meg	½		BTS-1Meg	
R17	2.2Meg 5%	½		BTS-2.2Meg 5%	
R18	2.2Meg 5%	½		BTS-2.2Meg 5%	
R19	430KΩ 5%	½		BTS-430K 5%	
R20	470Ω	½		BTS-470	
R21	4300Ω 5%	½		BTS-4300 5%	
R22	470KΩ	½		BTS-470K	
R23	68Ω	½		BTS-68	
R24	6800Ω	½		BTS-6800	
R25	27KΩ	1		BTA-27K	
R26	270Ω	½		BTS-270	
R27	3000Ω 5%	½		BTS-3000 5%	
R28	270KΩ	½		BTS-270K	
R29	1Meg	½		BTS-1Meg	
R30	12KΩ	½		BTS-12K	
R31	1000Ω	½		BTS-1000	
R32	68Ω	½		BTS-68	
R33	39KΩ	½		BTS-39K	
R34	1000Ω	½		BTS-1000	
R35	150KΩ	½		BTS-150K	Note 2
R36	68KΩ	½		BTS-68K	
R37	100KΩ 5%	½		BTS-100K 5%	
R38	100KΩ 5%	½		BTS-100K 5%	
R39	39KΩ	½		BTS-39K	
R40	82KΩ	½		BTS-82K	
R41	27KΩ	½		BTS-27K	
R42	100KΩ	½		BTS-100K	Note 1
R43	6800Ω	½		BTS-6800	
R44	68KΩ	½		BTS-68K	Note 1
R45	2.2Meg	½		BTS-2.2Meg	Note 1
R46	68KΩ	1		BTA-68K	
R47	3300Ω	2		BTB-3300	Note 1
R48	330KΩ	½		BTS-330K	
R49	100KΩ 5%	½		BTS-100K 5%	
R50	68KΩ 5%	½		BTS-68K 5%	
R51	39KΩ 5%	½		BTS-39K 5%	
R52	8200Ω 5%	½		BTS-8200 5%	
R53	1Meg	½		BTS-1Meg	
R54	100KΩ 5%	½		BTS-100K 5%	
R55	82KΩ 5%	½		BTS-82K 5%	
R56	4.7Meg	½		BTS-4.7Meg	
R57	82KΩ	1		BTA-82K	
R58	3300Ω	2		BTB-3300	
R59	39KΩ	½		BTS-39K	
R60	5600Ω	½		BTS-5600	
R61	39KΩ	½		BTS-39K	
R62	4.7Meg	½		BTS-4.7Meg	
R63	180KΩ	1		BTA-180K	
R64	3300Ω	2		BTB-3300	
R65	220KΩ	½		BTS-220K	
R66	220KΩ	½		BTS-220K	
R67	220KΩ	½		BTS-220K	
R68	4700Ω	½		BTS-4700	
R69	100KΩ 5%	½		BTS-100K 5%	
R70	330KΩ	1		BTA-330K	
R71	3300Ω	2		BTB-3300	
R72	220KΩ	1		BTA-220K	
R73	82KΩ	½		BTS-82K	
R74	68Ω	½		BTS-68	
R75	470Ω	½		BTS-470	
R76	10KΩ	½		BTS-10K	
R77	68KΩ	½		BTS-68K	
R78	470Ω	½		BTS-470	
R79	10KΩ	½		BTS-10K	
R80	27KΩ	½		BTS-27K	
R81	100KΩ	½		BTS-100K	
R82	2.7Ω	1			Note 3
R83	270KΩ	½		BTS-270K	

Note 1. Not used in some versions.
Note 2. Some versions use a 100KΩ, ½ watt resistor in this application.
Note 3. Some versions use a 3Ω, 1 watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PILOT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC Ⓐ.55A	360VCT .068ADC	5VAC Ⓐ 2A	6.3VCT Ⓐ.88A SEC.4 6.3VAC Ⓐ2.61A	55-43 ①					

① Center tap on secondary #3 not used.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PILOT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω	0Ω	70-80				
L2	Cathode Choke	1Ω		75-33	19-1004		4529	5 Microhenries
L3	RF Choke	1Ω		75-33	19-1004		4529	5 Microhenries
L4	FM RF Coil	0Ω		71-40				
L5	Fil. Choke	0Ω		75-19	19-1001		4604	1.6 Microhenries
L6	Cathode Choke	1Ω		75-33	19-1004		4529	5 Microhenries
L7	Fil. Choke	0Ω		75-19				
L8	RF Choke	1Ω		75-33	19-1004		4529	5 Microhenries
L9	FM Osc. Coil	0Ω		72-76				
L10	AM Ant. Coil	0Ω	.2Ω	270-53				
L11	455KC Trap	26Ω		79-102				
L12	AM RF Coil	7Ω		71-41				Tapped Ⓐ 2.2Ω
L13	AM Osc. Coil	2.9Ω		72-75	14-1033	BC-387 *	71-OSC ■	Tapped Ⓐ .4Ω
L14	1st. FM IF	.7Ω	.7Ω	273-151	16-3487	FM-254	1463	
L15	1st. AM IF	9Ω	9Ω	273-129	16-6758	BC-352	12-C1	
L16	2nd. FM IF	.7Ω	.7Ω	273-151	16-3487	FM-254	1463	
L17	2nd. AM IF	8.5Ω	8.5Ω	273-129	16-6758	BC-353	12-C2	
L18	FM Limiter	.7Ω	.7Ω	273-151	16-3487	FM-254	1463	
L19	Discriminator	.8Ω	1ΩCT	279-77				
L20	10KC Filter	325Ω		79-106				Tapped Ⓐ 150Ω
L21	Line Choke	0Ω		75-19	19-1001		4604	1.6 Microhenries
L22	Line Choke	0Ω		75-19	10-1001		4604	1.6 Microhenries

* Use secondary winding only.
■ Use primary winding only.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA PILOT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	.068A	125Ω	4Hy	57-16		C-2977①			

① Use original shield.

MISCELLANEOUS

ITEM No.	PART NAME	PILOT PART No.	NOTES
M1	Dial Light	68-6	#47, FM Dial
M2	Dial Light	68-6	#47, FM Dial
M3	Dial Light	68-6	#47, AM Dial
M4	Dial Light	68-6	#47, AM Dial
M5	Dial Light	68-6	#47, Phono, tape, auxiliary selector indicator
M6	Tuning Cap.	26-59	6 Gang, AM Sections (32-495MMF, 32-495MMF, 22-165MMF)
M7	Switch	100-103	Phono Equalization (Rotary-wafer type)
M8	Switch	100-105	Selector (Rotary-wafer type)
M9	Switch	100-38	AM-FM (3 Pole - 3 Position, Slide Type)

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SPARTON MODELS 13C505, 13C506, 23A205, B, 23A206 (Ch. 22V244B, 23U244B)

MODEL 23A205B

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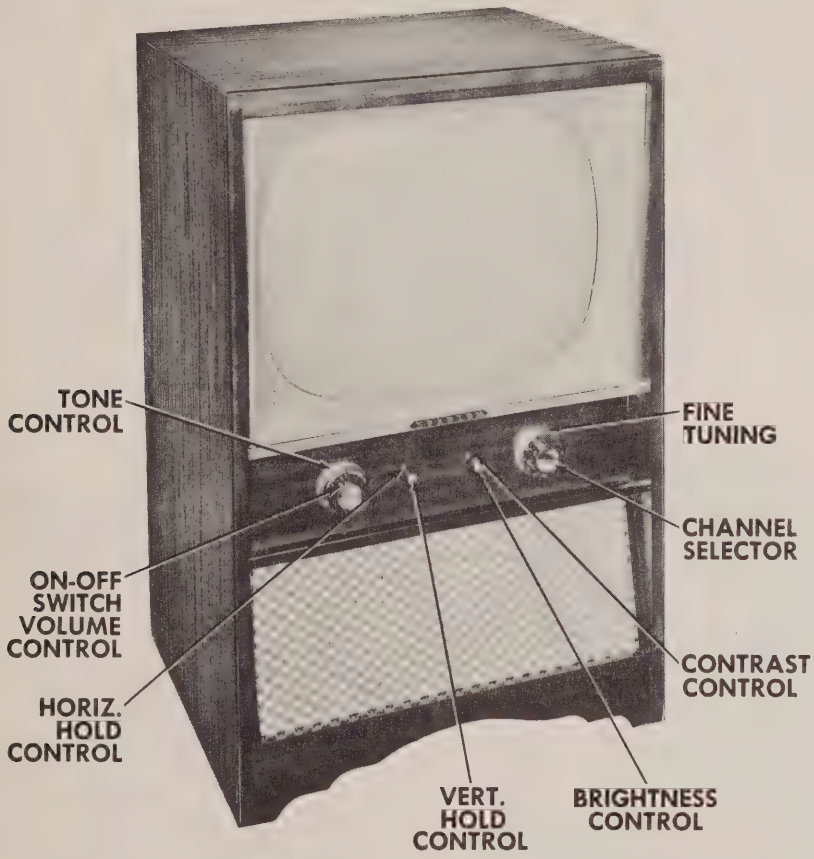

SPARTON MODEL 23A205B

TRADE NAME	Sparton	MODELS	CHASSIS
		13C505, 23A205, 23A205B	22V244B
		13C506, 23A206	23U244B
MANUFACTURER	Sparton, Div. of Sparks-Withington Co., Jackson, Mich.		
TYPE SET	Televison Receiver		
TUBES	Twenty-three		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 2.44 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF,	Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

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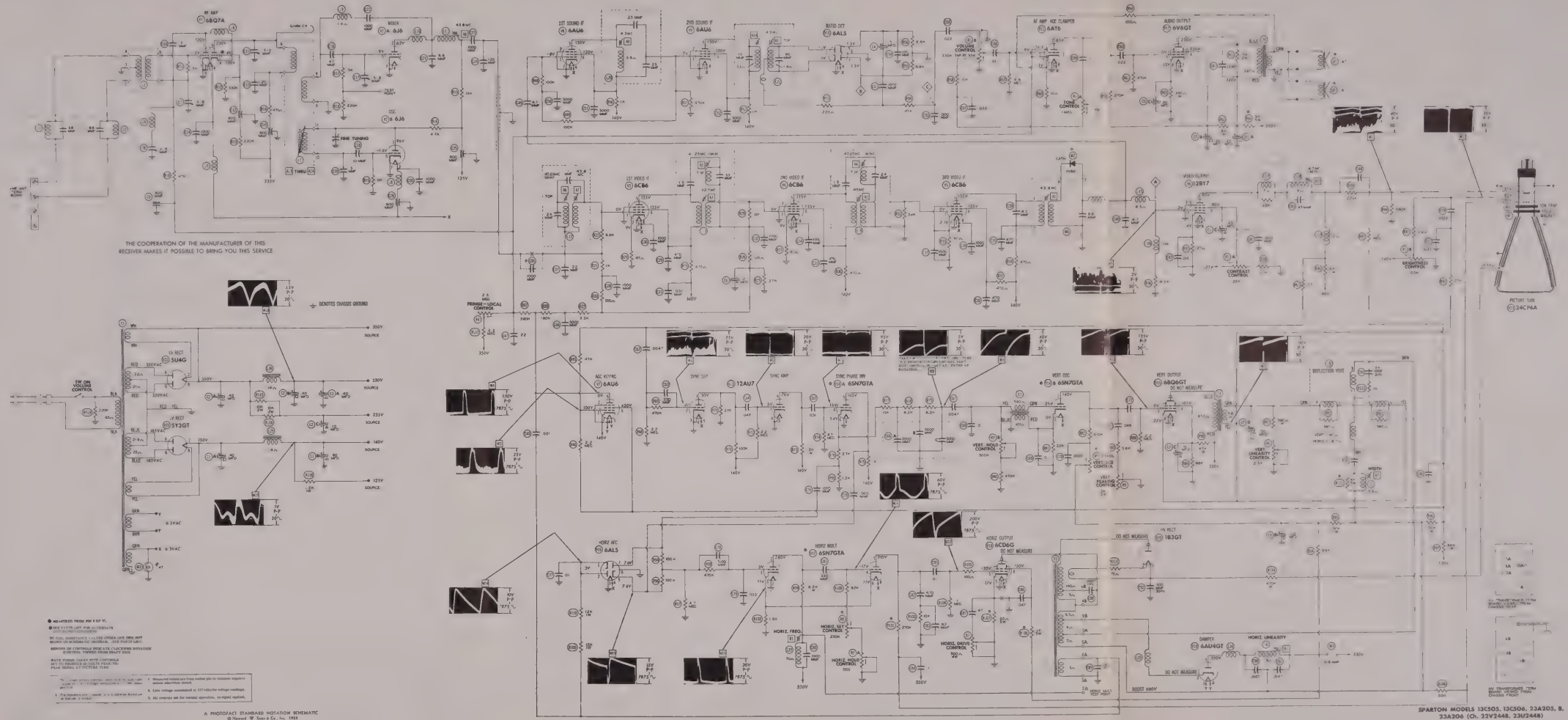
SPARTON MODELS 13C505, 13C506, 23A205, B, 23A206 (Ch. 22V244B, 23U244B)


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
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SPARTON MODELS 13C505, 13C506, 23A205, B, 23A206 (Ch. 22V244B, 23U244B)
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CHASSIS TOP VIEW

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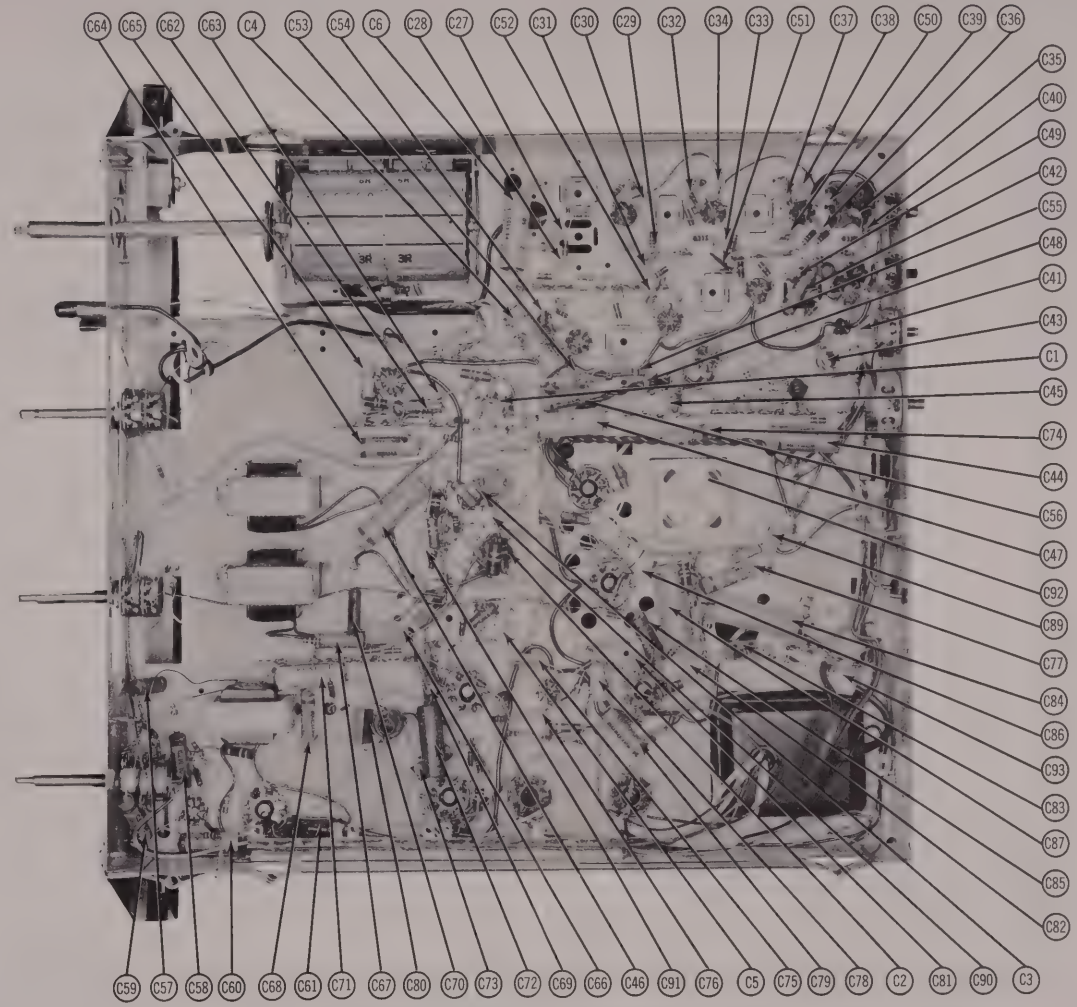
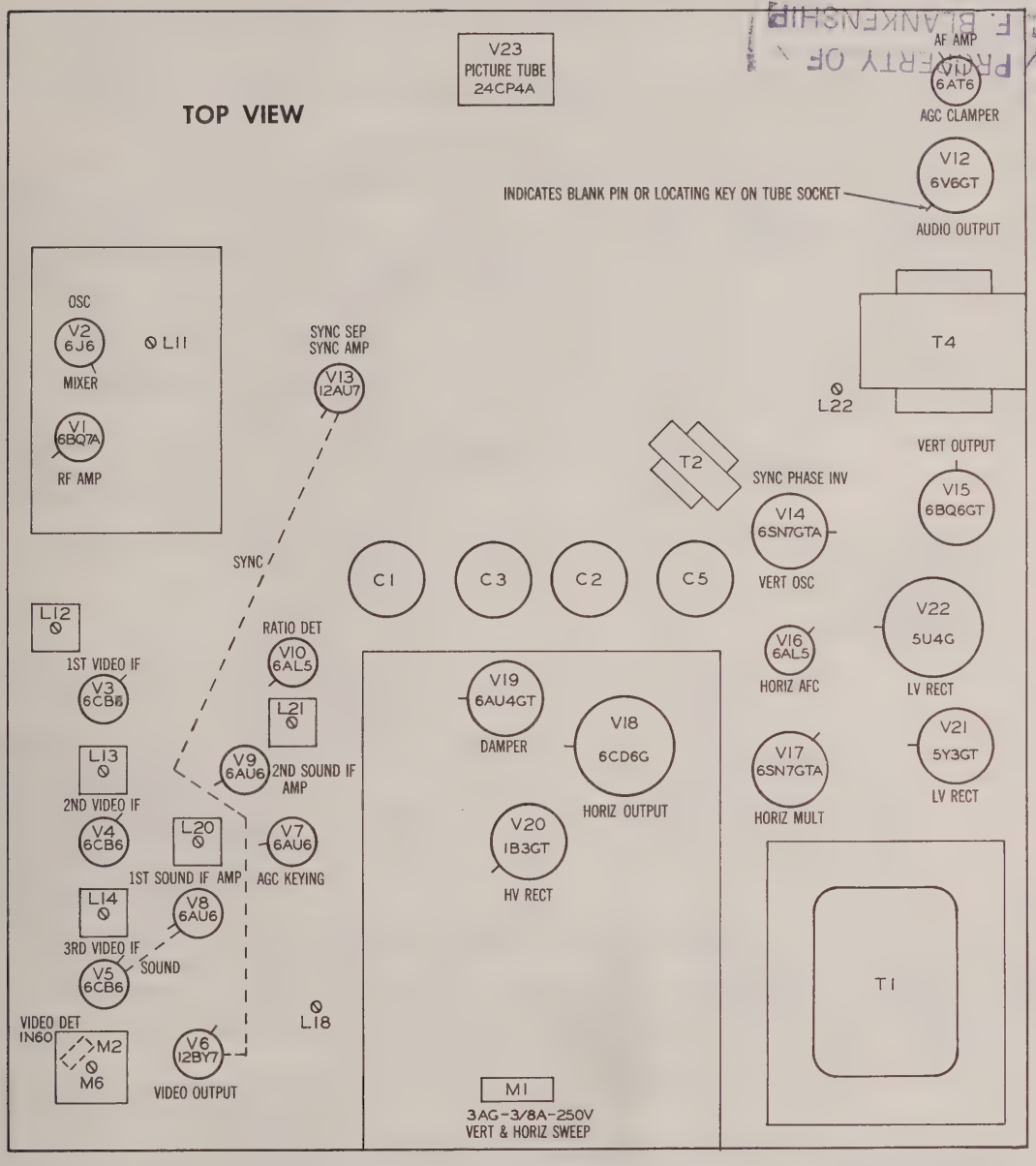


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V21, V22

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V21
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V7, V23
Has pic, no sound - V8, V9, V10, V11, V12
Overloaded picture - V7, V11

SYNC FAILURE
No vert. sync - V14
No horiz. sync - V14, V16, V17
No vert. or horiz. sync - V13, V14

SWEEP FAILURE
No raster, has sound - V17, V18, V19, V20, V23, Fuse (M1)
No vertical deflection - V14, V15
Poor vert. linearity or foldover - V14, V15
Poor horiz. linearity or foldover - V17, V18, V19
Narrow picture - V17, V18, V19, V20, V21, V22
Vert. off freq. - V14
Horiz. off freq. - V14, V16, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from chassis. Do not remove the horizontal multivibrator tube (V17) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove RF amplifier tube (V1) and the AGC keying tube (V7) from their sockets. Connect the negative lead of a 4.5 volt bias supply to the ungrounded side of C6. Connect the positive lead to chassis. Set the tuner to channel 12 or any other unused high channel.
Use only enough generator output to provide usable indication on scope.
Connect a 50MMF capacitor across the vertical input terminals of oscilloscope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
NOTE: When using the VHF/UHF tuner (Pd 93179) the converter tube is a 6U8 instead of a 6J6. Therefore, in steps 7, 8, 9 and 10 the high side of generator is connected to pin 2 (grid) of 6U8. Make connection same as when using a 6J6 converter tube.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	Not used	43.8MC (Unmod)	12	Use VTVM. DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	"	45.0MC	"	"	A2	"
3.	"	"	"	42.7MC	"	"	A3	"
4.	"	"	"	47.25MC	"	"	A4	Adjust for MINIMUM deflection.
5.	"	"	"	41.25MC	"	"	A5	"
6.	"	"	44MC (10MC Swp)	41.25MC 42.7MC 45.0MC 47.25MC	"	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.		If necessary, retouch A1, A2 and A3 for flat response from 42.7MC to 45MC as in Fig. 1. Retouch A4 and A5 to place 47.25MC and 41.25MC markers in trap notch as in Fig. 1.
7.	"	High side to pin 5 (grid) of 6J6 (V2). Low side to chassis. (Make connection to free end of small length of insulated wire wrapped around pin 5 (grid) of V2.	Not used	47.25MC (Unmod)	"	Use VTVM. DC probe to point (A). Common to chassis.	A6	Adjust for MINIMUM deflection.
8.	"	"	"	43.8MC	"	"	A7	Detune A8 fully counter clockwise. Adjust A7 for maximum deflection.
9.	"	"	"	43.8MC	"	"	A8	Shunt L12 with a 1KΩ resistor. Adjust A8 for maximum deflection. Remove 1KΩ resistor.
10.	"	"	44MC (10MC Swp)	41.25MC 42.7MC 45.0MC 45.75MC 47.25MC	12	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.		Check for response similar to Fig. 1. If necessary, slightly retouch A7 and A8 to obtain flat-topped response. 45.75MC should fall at 50% on response curve. Check 41.25 MC and 47.25MC markers. Use high generator output to observe trap notches. If necessary, slightly retouch A4, A5 and A6 to place markers in trap notches as in Fig. 1.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Remove V5 (6CB6) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B). Common to chassis.	A9, A10	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to point (C). Common to chassis.	A-11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Replace V5 in its socket.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Remove V5 (6CB6) from its socket.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A9, A10	Disconnect stabilizing capacitor C4. Adjust for curve of maximum amplitude and symmetry similar to Fig. 2.
12.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A-11	Reconnect stabilizing capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines. Replace V5 in its socket.

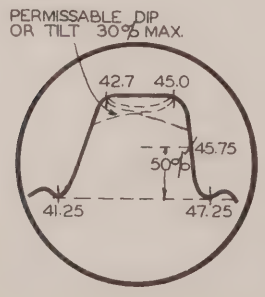


FIG. 1

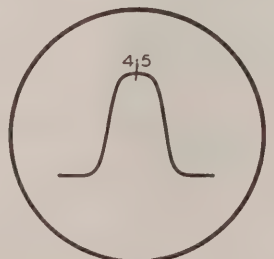


FIG. 2

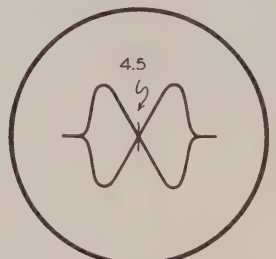


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

4.5MC TRAP ALIGNMENT

Remove V5 (6CB6) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig.-4) to pin 11 (cathode) of picture tube. Common to chassis.	A12	Adjust for MINIMUM deflection. Replace V5 in its socket.

VHF OSCILLATOR ALIGNMENT FOR VHF TUNER # Pd 92102

Replace the RF amplifier tube (V1) in its socket.
Leave bias connected as under "Video IF Alignment".
The channel oscillator adjustment screws are reached thru a hole just to the right of the fine tuning shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A13	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%. Remove test equipment. Replace V7 in its socket.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A14	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A15	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A16	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A17	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A18	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A19	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A20	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A21	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A22	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A23	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A24	

VHF OSCILLATOR ALIGNMENT FOR VHF/UHF TUNER #Pd 93179.

Replace the RF amplifier tube in its socket.
Leave bias connected as under "Video IF Alignment".
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A25. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A25 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel oscillator adjustment screws are reached thru a hole just above and slightly to the left of the fine tuning shaft. This hole extends thru the UHF tuner on all VHF channels.
The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Align the individual oscillator adjustments as in step 14 under "VHF Oscillator Alignment for VHF Tuner # Pd 92102".

VHF RF AND MIXER ALIGNMENT FOR TUNER Pd 92102 & VHF/UHF TUNER Pd 93179

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF OSCILLATOR ALIGNMENT

The UHF channel strip adjustments are reached thru the same hole provided for VHF Adjustments (in VHF/UHF tuner # 93179).
Tune in any UHF station available and adjust the channel strip oscillator adjustment screw for clearest picture and best sound.
Repeat the procedure, if necessary, for all other available UHF stations in that area.

UHF RF AND MIXER ALIGNMENT

The UHF RF and Mixer portion of the VHF/UHF Tuner #93179 thas been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

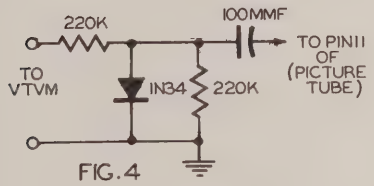


FIG.4

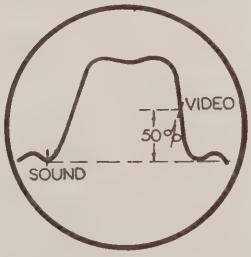


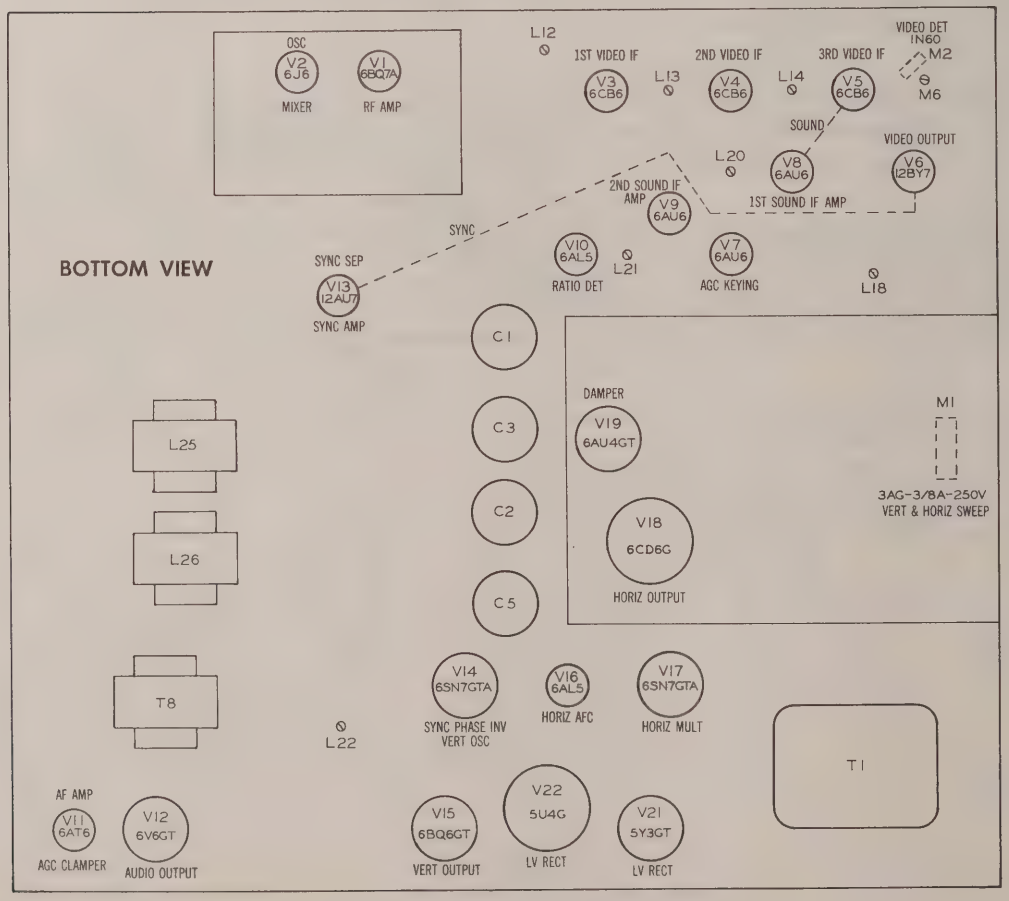
FIG.5

SPARTON MODELS 13C505, 13C506, 23A205, B, 23A206 (Ch. 22V244B, 23U244B)

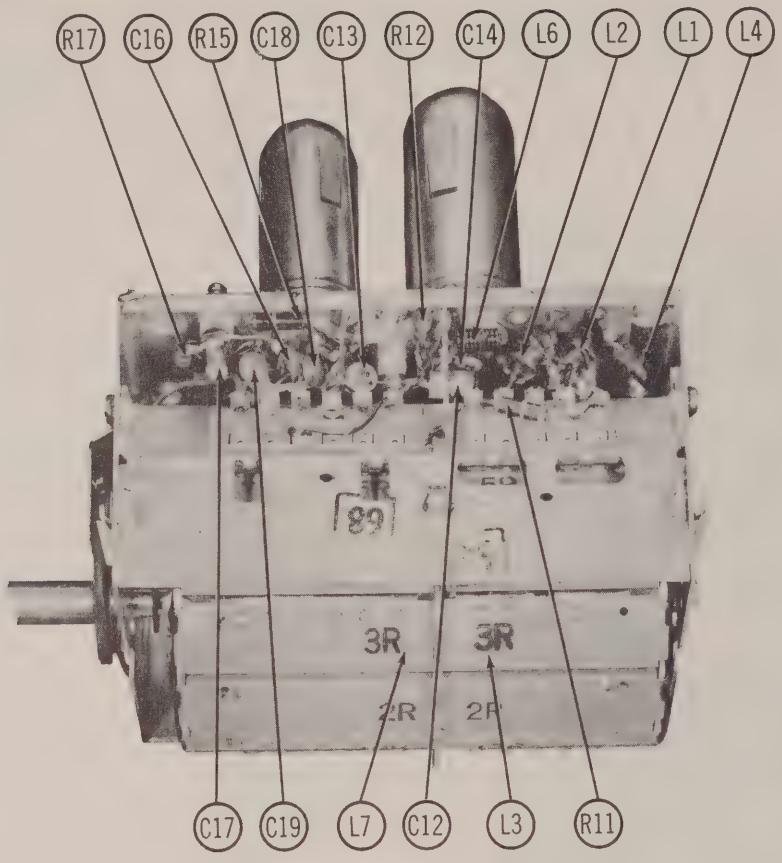
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	Inf.	600KΩ	0Ω	. 1Ω	0Ω	†5. 5KΩ	160KΩ	Inf.	0Ω
V 2	6J6	ǂ 6KΩ	ǂ16KΩ	. 1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	28KΩ	47Ω	0Ω	. 1Ω	ǂ585Ω	ǂ585Ω	0Ω		
V 4	6CB6	27KΩ	47Ω	0Ω	. 1Ω	ǂ585Ω	ǂ 585Ω	0Ω		
V 5	6CB6	. 2Ω	180Ω	0Ω	. 1Ω	ǂ585Ω	ǂ585Ω	180Ω		
V 6	12BY7	27Ω	4. 3KΩ	0Ω	0Ω	0Ω	. 1Ω	ǂ4KΩ	ǂ10KΩ	0Ω
V 7	6AU6	ǂ60KΩ	ǂ115Ω	ǂ115Ω	ǂ115Ω	200KΩ	▲80KΩ	ǂ115Ω		
V 8	6AU6	700KΩ	0Ω	0Ω	. 1Ω	ǂ1KΩ	ǂ1KΩ	0Ω		
V 9	6AU6	470KΩ	0Ω	0Ω	. 1Ω	ǂ1KΩ	ǂ1KΩ	0Ω		
V 10	6AL5	Inf.	Inf.	0Ω	. 1Ω	6. 8KΩ	0Ω	6. 8KΩ		
V 11	6AT6	6. 8Meg	10Ω	0Ω	. 1Ω	600KΩ	600KΩ	†275KΩ		
V 12	6V6GT	NC	. 1Ω	†3. 4KΩ	†4. 8KΩ	470KΩ	NC	0Ω	390Ω	
V 13	12AU7	ǂ35KΩ	2. 7Meg	0Ω	0Ω	0Ω	ǂ12KΩ	2. 2Meg	0Ω	. 1Ω
V 14	6SN7GTA	800KΩ	▲1. 7Meg	107Ω	4. 7Meg	ǂ1KΩ	4KΩ	. 1Ω	0Ω	
V 15	6BQ6GT	TP	0Ω	TP	†40KΩ	2. 2Meg	TP	. 1Ω	1. 1KΩ	TOP CAP †765Ω
V 16	6AL5	24KΩ	24KΩ	0Ω	. 1Ω	4. 8Meg	0Ω	4. 8Meg		
V 17	6SN7GTA	5Meg	†8. 2KΩ	1. 5KΩ	170KΩ	▲340KΩ	1. 5KΩ	0Ω	. 1Ω	
V 18	6CD6G	NC	0Ω	150Ω	TP	1Meg	NC	. 1Ω	†11KΩ	TOP CAP ▲7Ω
V 19	6AU4GT	NC	TP	170KΩ	NC	†120Ω	TP	ǂ114Ω	ǂ114Ω	
V 20	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲152Ω
V 21	5Y3GT	TP	25KΩ	NC	22Ω	TP	22Ω	NC	25KΩ	
V 22	5U4G	NC	80KΩ	NC	22Ω	NC	21Ω	NC	80KΩ	
V 23	24CP4A	ǂ114Ω	ǂ380KΩ	PIN 10 ▲56KΩ	PIN 11 ǂ150KΩ	PIN 12 ǂ114Ω				

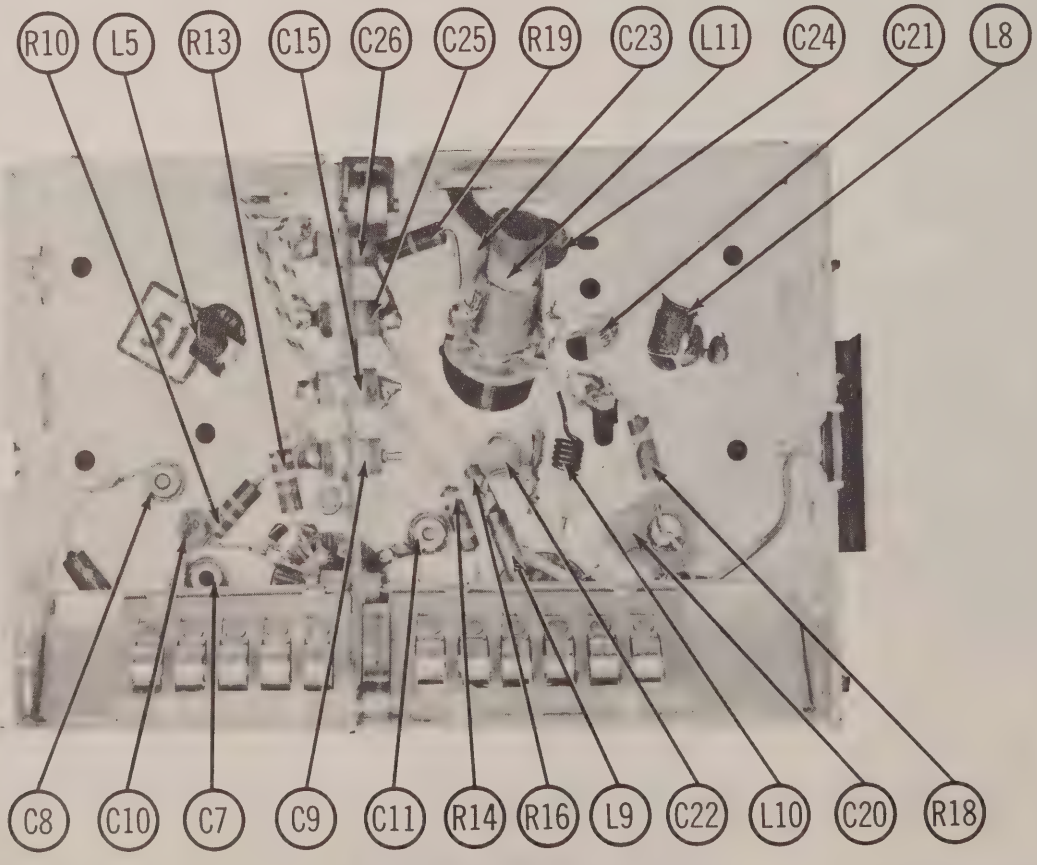
ǂMEASURED FROM PIN 8 OF V21.
†MEASURED FROM PIN 8 OF V22.
▲MEASURED FROM PIN 3 OF V19.
NC-NO CONNECTION.
TP-TIE POINT.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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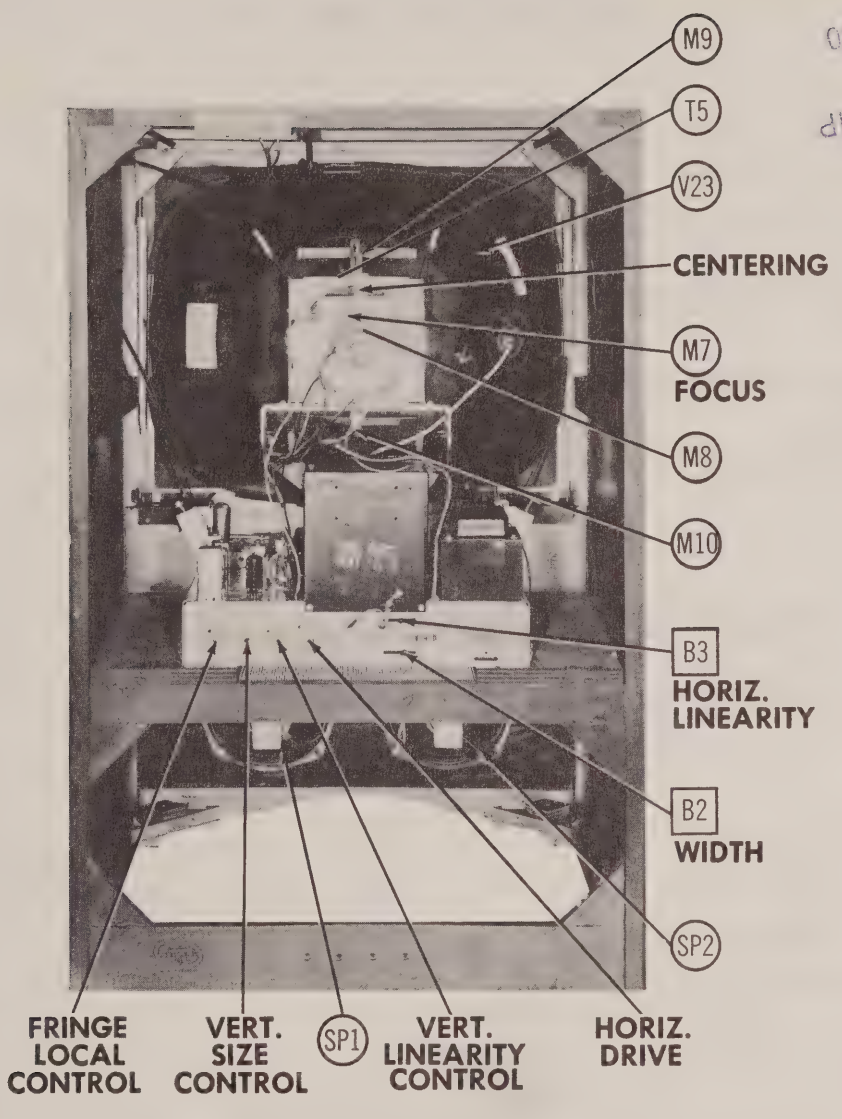


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Remove (V16) 6AL5 from its socket and set the horizontal hold control fully counter-clockwise. Shunt L22 with a .1MFD, 400V capacitor from test point (terminal #7 of high voltage transformer) to chassis.

Adjust the horizontal set control (R8A) until the picture appears to float into horizontal sync.

Remove the .1MFD capacitor across L22 and adjust the horizontal frequency slug (B1) until the picture appears to float into horizontal sync.

Replace V16 in its socket.

Two or three diagonal bars should appear just before picture pulls into sync as horizontal hold control is turned toward its mid-range position.

Adjust the horizontal drive control clockwise as far as possible without the presence of vertical white lines or compression near the center of the picture. Adjust the width coil slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally. Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V18, V19 and V22. Check adjustments B2, B3 and R7. Check T3, T5A, C82, C83, C85, R106 and other associated components.

DRIVE LINES

Check by substitution V18 and V19. Check adjustments R7 and B3. Check T3, T5A, C85, R106, R107 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V18 and V19. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V17, V18 and V19. Check C79 for open. Check L22, C78, R98, R99 and other associated components.

XMAS TREE EFFECT

Check by substitution V17, V18 and V19. Check T3 and T5 for internal arcing. Check L22, C77, C80, C81, R109, R110, R102 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V14 and V15. Check waveform W10.

If Satisfactory	If Unsatisfactory
Check T4, T5B, R89, R90, R91, C3C, C5D and other associated components.	Check T2, C69, C70, C72, R80, R82, R85 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V14 and V15. Check vertical size and vertical linearity controls for proper operation. Check R82, R85, T4 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V14 and V15. Check R82, R85, R5, C72, T2 and other associated components.

COMPRESSED AT TOP

Check by substitution V14 and V15. Check R89, R91, R6, C5D, T4, T5B and other associated components.

FOLDS

Check by substitution V14 and V15. Check C71, C72, R82, R83, R91, R9, T4, T5B and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V13 and V14. Check C62, C63, C64, C65, R71, R73, R75 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V14. Check vertical integrator network. Check T2, C67, C69, R80, R81, R2B and other associated components.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V16 and V17. Check C75, C76, C78, C79, R98, R100, L22 and other associated components.

HORIZONTAL BENDING

Check by substitution V13, V14, V16 and V17. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C41, C44, R40, L17, L19 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A12. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check R118, R40, C41, C44, C1C, L16, L17 and other associated components.

NEGATIVE PICTURE

Substitute V1. Check picture tube. Check picture tube. Check L17, C44 and other addociated components.

SMEAR

Substitute V6. Check L15, L16, L17, C44, R40 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9, V10, V11 and V12. Check stages V11 and V12 using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF stages for component failure or change of value.	Check C56, C58, C60, C61, C5C, C5B, R59, R62, R66, T8, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A-11 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

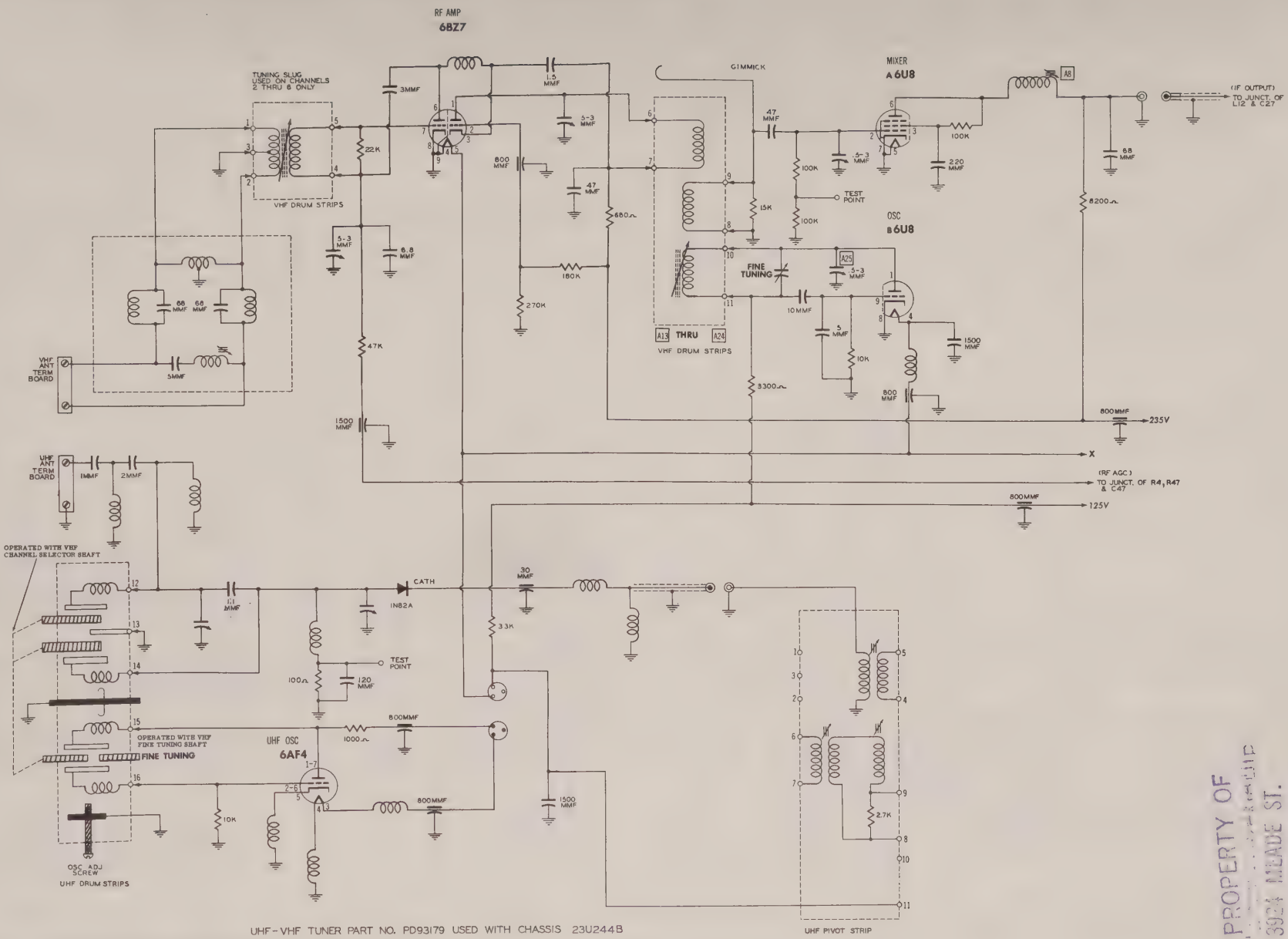
POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check by substitution V21 and V22. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check by substitution V21 and V22. Check B+ filter and decoupling network.



UHF-VHF TUNER PART NO. PD93179 USED WITH CHASSIS 23U244B

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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3924 MEADE ST.
DENVER, COLORADO

UHF-VHF TUNER SCHEMATIC

SPARTON MODELS 13C505, 13C506, 23A205, B, 23A206 (Ch. 22V244B, 23U244B)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amp.	6BQ7A	6BQ7A	9AJ	
V2	Mixer-Osc.	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	AGC Keying	6AU6	6AU6	7BK	
V8	1st Sound IF Amp.	6AU6	6AU6	7BK	
V9	2 nd Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp - AGC Clamper	6AT6	6AT6	7BT	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Sync Sep.- Sync Amp.	12AU7	12AU7	9A	
V14	Sync Phase Inv. - Sync Clamp.	6SN7GTA	6SN7GTA	8BD	6SN7GT used as an alternate.
V15	Vert. Output	6BQ6GT	6BQ6GT	8AM	
V16	Horiz. AFC	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	6SN7GT used as an alternate.
V18	Horiz. Output	6CD6G	6CD6G	5BT	
V19	Damper	6AU4GT	6AU4GT	4CG	
V20	RF Rect.	1B3GT	1B3GT	3C	
V21	LV Rect.	5Y3GT	5Y3GT	5T	
V22	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SPARTON PART No	CRS PART No.	GENERAL ELECTRIC PART No	SYLVANIA PART No	WESTINGHOUSE PART No	RETMA BASE TYPE	NOTES
V23	24CP4A ①	24TP4/ 24CP4A ①	24CP4A ①	24CP4A ② 24CP4	24CP4A ①	12N 12M	①Aluminized ②Silver Screen

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: SPARTON PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	NOTES
C1A	▲40	350	PA4307-34	FP375.6	TM-604030-350	T-110	
B	▲80	350					
C	▲20	300					
C2A	▲40	450	PA4307-35	FP376.6	TM-3094	T-186	
B	▲40	450					
C	▲10	350					
C3A	▲40	475	PA4307-32	FP396.1	TM-404010-500	Q-075	
B	▲20	475					
C	▲10	475					
C4	8	50	PA4308-3	TC30	TD-5-50	MMT-0505	
C5A	▲30	450	PA4307-36	FP437	TM-4103	Q-395	
B	▲30	450					
C	30	50					
D	▲100	50					
C6	5	50	PA4303-14	TC302	TD-2-50	MMT-0505	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: SPARTON PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	NOTES
C7	3-9			829-10			
C8	3-9			829-10			
C9	500						
C10	3			TCZ-3R3	NPOA-050	ZT-553	
C11	5-9			829-3	3115-01-0R5	CT565A	
C12	500						
C13	130			DD-121	811-121	UC-5312	
C14	1000			DD-102	801-001	DC-531	
C15	500						
C16	47			DD-470	831-470	UC-5447	
C17	5-9			829-3	3115-01-0R5	CT565A	
C18	10			TCZ-10	NPOK-100	ZT-541	
C19	5						
C20	1000			DD-102	801-001	DC-531	
C21	6.8			TCZ-6R8	NPOA-6R8	ZT-5568	
C22	1000			DD-102	801-001	DC-531	
C23	1000			DD-102	801-001	DC-531	
C24	130			TCN-130	N750L-131		
C25	500						
C26	500						
C27	33		CC34A-330F	TCZ-33	NPOK-330		
C28	1000		PA4334-6	DD-102	801-001	DC-531	
C29	470		PA4334-8	DD-471	831-471	UC-5347	
C30	1000		PA4334-6	DD-102	801-001	DC-531	
C31	1000		PA4334-6	DD-102	801-001	DC-531	
C32	1000		PA4334-6	DD-102	801-001	DC-531	
C33	470		PA4334-8	DD-471	831-471	UC-5347	
C34	1000		PA4334-6	DD-102	801-001	DC-531	
C35	470		PA4334-8	DD-471	831-471	UC-5347	
C36	470		PA4334-8	DD-471	831-471	UC-5347	
C37	1000		PA4334-6	DD-102	801-001	DC-531	
C38	1000		PA4334-6	DD-102	801-001	DC-531	
C39	4.7		PA4338-11	TCZ-4R7	NPOA-4R7	ZT-5547	
C40	4.7		PA4338-11	TCZ-4R7	NPOA-4R7	ZT-5547	
C41	1000		PA4334-6	DD-102	801-001	DC-531	
C42	.015	400	PC43F1-153	DD16-153		PT6151	
C43	47		CC39A-470F	TCZ-47	NPO-338-470	ZT-5447	
C44	.1	400	PC43G1-104	DF-104		PT401	
C45	.001	500	PC43GM-102	DD-102	GP2L-102	PT621	
C46	.1	600	PC43GM-104	DF-104		PT601	
C47	.33	200	PC43GX-224			PT4022	
C48	5000		PA4334-1	DD-502	811-005	DC-535	
C49	4.7		PA4338-11	TCZ-4R7	NPOA-4R7	ZT-5547	
C50	5000		PA4334-1	DD-502	811-005	DC-535	
C51	5000		PA4334-1	DD-502	811-005	DC-535	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: SPARTON Part No.	CENTRALAB Part No.	ERIE Part No.	MALLORY Part No.	NOTES
C52	5000		PA4334-1	DD-502	811-005	DC-525	
C53	1000		PA4334-6	DD-102	801-001	DC-531	
C54	100		HK34M-101	D6-101	GP1K-101	UC-531	
C55	1000		HK34M-102	D6-102	GP2L-102	UC-531	
C56	.033	400	PC43CL-333	DF-303	81T-03	PT6123	
C57	.033	200	PC43GK-333	DF-303		PT6123	
C58	.01	400	PC43GL-103	DF-103		PT611	
C59	.01	600	PC43GM-103	D6-103	GP2-333-103	PT611	
C60	.022	600	PC43GM-223	DF-303	81T-03	PT6123	
C61	.0047	1000	PC43GN-473	DD-473	81SEY-473	PT6347	
C62	.0047	400	PC43GL-473	DD-472	GP3-333-472	PT6347	
C63	220	500	MC50K-221	D6-221	81L-221	MUC3340	
C64	.047	400	PC43GL-473	DF-503		PT6147	
C65	.001	600	PC43GM-102	D6-103	GP2L-102	PT621	
C66A	5000			DD-502	811-005	DC-525	
B	5000		PA4339-4	DD-502	811-005	DC-525	
C	5000			DD-502	811-005	DC-535	
C67	.0047	400	PC43GL-472	DF-472	GP3-333-472	PT6247	
C68	.01	400	PC43FL-103	D8-103	GP2-333-103	PT411	
C69	.01	400	PC43GL-103	D6-103	GP2-333-103	PT411	
C70	.0023	600	PC43GM-232	D6-232	GP3-333-232	PT6232	
C71	.068	400	PC42FL-683				
C72	.1	600	PC43GL-104	DF-104		PT601	
C73	.0033	400	PC43GL-332	D8-332	GP3-333-332	PT6233	
C74	.0022	400	PC43GL-222	D6-222	GP3-333-222	PT6222	
C75	.001	500	MC81E-102	D6-102	GP2L-102	MC255	
C76	1000	500	MC81E-102	D6-102	GP2L-102	MC255	
C77	.01	600	PC43FM-103	D6-103	GP2-333-103	PT611	
C78	5100	500	MC81E-512				
C79	.033	200	PC43GK-333	DF-303		PT6123	
C80	3900	500	MC83F-392			MC3643	
C81	330	500	MC80F-331	D6-331	81J-331		
C82	470	500	MC80E-471	D6-471	81J-471	MC3546	
C83	82	500	MC80G-820	D6-820	81G-820		
C84	.1	600	PC43GM-104	DF-104		PT601	
C85	.01	600	PC43GM-103	D6-103	GP2-333-103	PT611	
C86	.047	600	PC43GM-473	DF-503		PT6147	
C87	.47	200	PC43GK-474			PT4047	
C88	.0027	1000					
C89	.001	1000	PC42GN-102	DD-103	81SEY-103	PT1821	
C90	.047	600	PC42FM-473	DF-503		PT6147	
C91	.047	600	PC42FM-473	DF-503		PT6147	
C92	500	20000	PA4348		416		
C93	.1	400	PC42FL-104	DF-104		PT401	
C94	68	2000	PA4336-8	DD30-680	3KV-680	DC30488	
C95	1000		PA4334-6	DD-102	801-001	DC-102	Note 1

Note 1. Used in chassis 23U2445 only.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No	IRC PART No	CLAROSTAT PART No	CENTRALAB PART No	MALLORY PART No	INSTALLATION NOTES
R1A	1Meg	½	PA4428-3	QJ-736+	RTV-472	F1-55	UF16L-	Tone (Panel)
B	250KΩ	½				R3-38	UB354-T7*	Volume (Tap at 55KΩ) (Rear)
C	Switch	½				KB-1	UB-26	Attach to R1B.
R2A	50KΩ	½	PA4427-1	QJ-571▲	RTV-468	F1-29	UF54L-	Horizontal Hold (Panel)
B	500KΩ	½				R3-40	UR55L-	Vertical Hold (Rear)
R3A	25KΩ	½	PA4457-2	QJ-597▲	RTV-476	F1-27	UF253L-	Contrast (Panel)
B	100KΩ	½				R3-31	UR18L- ††	Brightness (Rear)
R4A	2.5Meg	½	PA4454	QU-239	A47-2.5Meg-S	DX-83	SU-565	Fringe-Local
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R4A.
R5A	2.5Meg	½	PA4457B	QJ-239	A47-2.5Meg-S	DX-83	TA250L	Vertical Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A.
R5A	2.5Meg	½	PA4454	QU-239	A47-2.5Meg-S	DX-83	SU-565	Vertical Size (See Note 1)
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A.
R6A	250KΩ	½	PA4466	QU-132	A47-250K-S	AB-7	U-8	Vertical Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A.
R7	500Ω	4	PC-70023-1				M500PK	Horizontal Drive (Wire Wound)
R8A	250KΩ	½	PA4439D	QU-130	A47-250K-S	AB-50	TA254L	Horizontal Set
B	Shaft		Not Req.	NQ	FKS-1/4	AK-1	Not Req.	Attach to R8A.
R8A	250KΩ	½	PA4473	QU-130	A47-250K-S	AB-50	SU-46	Horizontal Set (See Note 1)
B	Shaft		Not Req.	NQ	Not Req.	AK-1	Not Req.	Attach to R8A.
R9	3000Ω	2	PC-70024-1			39-3000-70D		Vertical Peaking (Fixed Minimum 700Ω) (Wire Wound)

*CONCENTRIKIT EQUIVALENT, K-2 KIT, BASE ELEMENTS AND SHAFTS, B1I-137, PI-300 (Panel) B1B-132, RI-213 (Rear) 76-1 Switch

†Universal Replacement (Mallory Exact Duplicate Part No. UE1S8S3).
▲CONCENTRIKIT EQUIVALENT, K-2KIT, BASE ELEMENTS AND SHAFTS, B1I-123, PI-200 (Panel) B1I-133, RI-212 (Rear)

*Universal Replacement (Mallory Exact Duplicate Part No. UE96S).
▲CONCENTRIKIT EQUIVALENT, K-2 KIT, BASE ELEMENTS AND SHAFTS, B1I-120, PI-200 (Panel) B1I-130, RI-212 (Rear)

††Universal Replacement (Mallory Exact Duplicate Part No. UE81I)
Note 1. Used as an alternate control in some versions.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	NOTES
R10	47KΩ	½	BR12S-473	BTS-47K	
R11	130Ω	½	BR12S-133		
R12	330KΩ	½	BR12S-334		
R13	220KΩ	½	BR12S-224		
R14	470Ω	½	BR12N-471	BTS-470	
R15	10KΩ	½	BR12S-103		
R16	470ΩΩ	½	BR12S-153		
R17	15KΩ	½	BR12S-153		
R18	220KΩ	½	BR12N-224		
R19	15KΩ	½	BR12S-153		
R20	100Ω	½	BR12N-101	BTS-100	
R21	1000Ω	½	BR12N-102	BTS-1000	
R22	6800Ω 5%	½	BR12G-682		
R23	470Ω	½	BR12N-471	BTS-470	
R24	470Ω	½	BR12N-471	BTS-47	
R25	27KΩ	½	BR12G-273	BTS-27K	
R26	100Ω	½	BR12N-101	BTS-100	
R27	3300Ω	½	BR12N-332	BTS-3300	
R28	180KΩ 5%	½	BR12G-184	BTS-180K 5%	
R29	10KΩ 5%	½	BR12G-103		
R30	470Ω	½	BR12N-471	BTS-470	
R31	47Ω	½	BR12S-470	BTS-47	
R32	39KΩ 5%	½	BR12G-393		
R33	470Ω	½	BR12N-471	BTS-470	
R34	470Ω	½	BR12N-471	BTS-470	
R35	180Ω	½	BR12S-181	BTS-180	
R36	4300Ω 5%	½	BR12G-432		
R37	27Ω	½	BR12S-270	BTS-27	
R38	27KΩ	½	BR12S-273		
R39	220KΩ	½	BR12S-224		
R40	600Ω	½	PA4522	PW7-4000	
R41	330KΩ	½	BR12S-334		

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	NOTES
R42	33KΩ	½	BR12S-333		
R43	470KΩ	½	BR12S-474		
R44	680KΩ	½	BR12S-684		
R45	47KΩ	½	BR12S-473		
R46	2.2Meg	½	BR12S-225		
R47	390KΩ 5%	½	BR12G-394		
R48	100KΩ	½	BR12N-104	BTS-100K	
R49	100KΩ	½	BR12N-104	BTS-100K	
R50	1000Ω	½	BR12N-102	BTS-1000	
R51	470KΩ	½	BR12S-474	BTS-470K	
R52	1000Ω	½	BR12N-102	BTS-1000	
R53	220Ω 5%	½	BR12G-331	BTS-220 5%	
R54	47KΩ	½	BR12S-473	BTS-47K	
R55	6800Ω 5%	½	BR12G-682	BTS-6800 5%	
R56	6800Ω 5%	½	BR12G-682	BTS-6800 5%	
R57	6.8Meg	½	BR12N-685	BTS-6.8Meg	
R58	10KΩ	½	BR12S-103	BTS-10K	
R59	270KΩ	½	BR12S-274	BTS-270K	
R60	10Ω	½	BR12S-100	BTS-10	
R61	470KΩ	½	BR12N-474	BTS-470K	
R62	1800Ω	1	BR12S-182	BTA-1800	
R63	15KΩ	2	BR12N-153	BTS-15K	
R64	100Ω	½	BR12S-101	BTS-100	
R65	390Ω	1	CR12S-391	BTA-390	
R66	3000Ω	5	PS40S21-1	PW7-3000	Note 1
R67	10KΩ	½	BR12S-103		
R68	2.2Meg	½	BR12N-225		
R69	470KΩ	½	BR12S-474		
R70	27KΩ	½	BR12S-273		
R71	100KΩ	½	BR12S-104		
R72	2.2Meg	½	BR12N-225		
R73	12KΩ	1	CR12S-123		
R74	4.7Meg	½	BR12S-475		
R75	1000Ω 5%	½	BR12G-102		
R76	270Ω 5%	½	BR12G-272		
R77	15KΩ	½	BR12S-153		
R78	8200Ω	½	BR12S-822		
R79	8200Ω	½	BR12S-822		
R80	470KΩ 5%	½	BR12G-474		

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SPARTON PART No.	IRC PART No.	NOTES
R81	22KΩ	½	BR12S-223		
R82	470KΩ	½	BR12S-474		
R83	5600Ω	½	BR12S-562		
R84	68KΩ	½	BR12S-683		
R85	150KΩ	1	CR12S-154		
R86	100KΩ	1	CR12S-104		
R87	68KΩ	1	CR12S-683		
R88	2.2Meg	½	BR12N-225		
R89	68KΩ	½	BR12S-683		
R90	47KΩ	1			
R91	390Ω	1	CR12S-391		
R92	560Ω	1			
R93	560Ω	1			
R94	100KΩ 5%	½	BR12G-104		
R95	1200Ω 5%	½	BR12G-122		
R96	100KΩ 5%	½	BR12G-104		
R97	4.7Meg	½	BR12N-475		
R98	470KΩ	½	BR12S-474		
R99	8200Ω 5%	1	CR12G-822		
R100	82KΩ	½	BR12S-822		
R101	270KΩ 5%	½	BR12G-274		Note 2
R102	1500Ω 5%	1	CR12G-152		
R103	10KΩ	½	BR12S-103		
R104	1Meg	½	BR12S-105		
R105	100Ω	½	BR12N-101		
R106	11KΩ	5	PS40S23-1	1 3/4A-11K	Note 1
R107	150Ω	5	PS40S23-1	PW7-150	Note 1
R108	56KΩ	½	BR12S-563		
R109	12KΩ	1	CR12S-123		
R110	12KΩ	1	CR12S-123		
R111	4000Ω	5	PS40S23-1	PW7-4000	Note 1
R112	1500Ω 5%	1	CR12G-152		
R113	7.5Ω	1	BRW12S-75		
R114	470Ω	1	CR11N-474	BTA-470K	
R115	10KΩ	2	BR12S-103	BTS-10K	
R116	10KΩ	2	BR12S-103	BTS-10K	
R117	2.2Meg	½	BR12S-225	BTS-2.2Meg	
R118	120Ω	1	CR12S-121	BTA-1200	
R119	220KΩ	½	BR12N-224	BTS-220K	

Note 1. Items R66, R105, R107, R111 are combined in one unit.
Note 2. Some versions use a 180KΩ, 1 watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC 1	RATING: SEC 2	REPLACEMENT DATA: SPARTON PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117VAC ⑤2.64	680VCT .560ADC	370VCT .090A	AB44037-1						
	SEC. 3	SEC. 4	SEC. 5							
	5VAC ⑥3A	5VAC ⑥3A	6.3VAC ⑥2.8A							
	SEC. 6 6.3VAC ⑥2.8A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: SPARTON PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Rom PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Osc. Trans.	AB47014-1	B6700	A-3000	209T1	V40S	A-8111	24A67	A-95X
T3	Horiz. Output Trans.	PC70022		HVO-34①②		X094①②			
T4	Vert. Output Trans.	AB44071-2	S1800	A-3023	204T2	V094①②	A-8115	24S86	A-101U
T5A	Yoke(90°) Horiz. (L.6MH)	PC70028 ②	DF606 ①	MDF-81①	237D1 ①		DY-12A ①	Y-36 ①	Y-40-1 ①
B	Vert.(40MH)						DY-13A ①		Y-40-2 ①
T6	Horiz. Lin. Coil (.6-3.75MH)	AA5400-9		MWC-4 ③④⑤	20IR5 ⑤	20IR12A ③④⑤	WC-7 ⑤	WC-16 ③④⑤	WC-13 ⑦
T7	Width Coil(.6-6MH)	AA5400-8		MWC-5 ③④⑤	21IR1 ⑤	30IR15 ⑤	WC-8 ⑤	WC-23 ⑤	WC-13 ⑤

① Drill new mounting hole(s).
② Includes capacitor C96 and resistors R92 and R95.
③ Connect horizontal damping network across terminals #3 and #7. Use original network, if necessary.
④ Use original horizontal damping network.
⑤ Drill new mounting hole or use original slider and core.
⑥ Do not use tap.
⑦ Drill new mounting hole.
⑧ Connect to coded blue and green terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Rom Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4B		9		9			
9B		7		7			
10A		5		5			
8A		4		7			
4A		8		8			
3A		2		6			

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	IMPEDANCE: SEC	REPLACEMENT DATA: SPARTON PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T8	5.6KΩ	1.7Ω	AB44061-5	21008	A-3019	A-3849	26S49	S-5Z	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SPARTON PART No.	QUAM PART No.	
SP1	8"	PM	3.4Ω	PC-63000-49A	8A6Z3.2LF	① Used in models 13C505 and 13C506
SP2	8"	PM	3.4Ω	PC-63000-49A	8A6Z3.2LF	
	10"	PM	3.4Ω	PC-63000-54①		

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SPARTON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	IF Trap	0Ω						Wound on 68MMF cap.
L2	IF Trap	0Ω						Wound on 68MMF cap.
L3	Ant. Coils	0ΩCT	0Ω					
L4	IF Trap	.9Ω						
L5	Fil. Choke	0Ω						
L6	Neut. Coil	0Ω						
L7	RF, Mixer Grid & Osc. Coils	0Ω						
L8	Fil. Choke	0Ω						
L9	Feedback Coil	1.4Ω						
L10	RF Coil	0Ω						
L11	Conv. Plate	0Ω						
L12	1st. Video IF	.1Ω		AB43095-4				Includes 47.25MC trap
L13	2nd. Video IF	.2Ω	.2Ω	AB43095-5				Includes 41.25MC trap
L14	3rd. Video IF	.2Ω	.2Ω	AB43095-6				Includes 47.25MC trap
L15	Series Peaking Coil	6.5Ω		AA6613-13	19-3100	TV-181	6112	99 Microhenries
L16	Shunt Peaking Coil	11Ω		AA6613-11	19-3250	TV-185	6181	248 Microhenries
L17	Series Peaking Coil	17Ω		AA6402-9	19-3500 *		6174*	529 Microhenries wound on 22KΩ resistor
L18	4.5MC trap	1.9Ω		AA6407-1	20-1004	TV-151	1469	
L19	Shunt Peaking Coil	12Ω		AA6613-12	19-3250	TV-185	6130	272 Microhenries
L20	Sound IF	3.9Ω		AB43080-7				
L21	Ratio Det.	7.3Ω	1.4ΩCT	AB43080-6	17-3497	TV-115	6205	Tertiary winding ~.7Ω
L22	Horiz. Osc.	70Ω		AA6403-2	19-1576	TV-163	6210	
L23	RF Choke	.5Ω		AA6650-8	19-1003		4608	3.2 Microhenries
L24	RF Choke	.5Ω		AA6650-8	19-1003		4608	3.2 Microhenries

* Parallel with 22KΩ resistor.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SPARTON PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L25	.090A	114Ω	5Hy.	AB-47009-3	C5040		C-2334 ①		C-13X①
L26	.240A	114Ω	5Hy.	AB-47009-3			C-2334 ①	20C49 ①	C-15X ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SPARTON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3/8A 250V			312.375 (3AG 3/8A)	121004 (2 Required)	AGC 3/8	4592 (2 Required)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		SPARTON PART No.	SYLVANIA PART No.	
M2	1N60 *		1N60 or 1N132	Video Detector

* Some versions may use crystal diode type 1N64 in this application.

MISCELLANEOUS

ITEM No.	PART NAME	SPARTON PART No.	NOTES
M3	Dial Light		#47
M4	Tuner	PD92102	VHF - Chassis 22V244B
M5	Tuner	PD93179	VHF-UHF - Chassis 23U244B
M6	Video Det. Assy.	AA6833-2	Includes M2, coils and capacitor
M7	Focus Magnet	PB40387	Includes centering device, alternate part #PC70029
M8	Ion Trap	PA1248-6	
M9	Correction Magnet	PC63138	
M10	Correction Magnet	PC63138	
	Cabinet	PD90172-5	Models 13C505, 13C506
	Cabinet	PD90181-2	Models 23A205, 23A205B, 23A206
	Knob	PA5660-1	Horiz. hold, contrast and tone
	Knob	PA5669-1	Vert. Hold
	Knob	PA5670-1	Brightness
	Knob	PB40638-1	On-off-volume - Models 13C505, 23A205, 23A205B
	Knob	PB40635-1	On-off-volume- Models 13C506, 23A206
	Knob	PB40616-1	VHF channel selector - Models 13C506, 23A206
	Knob	PB40636-1	VHF channel selector - Models 13C505, 23A205, 23A205B
	Knob	PB40618	UHF channel selector - Models 13C506, 23A206
	Knob	PB40637	Fine tuning - Models 13C505, 23A205, 23A205B
	Knob	PB40617	Fine tuning - Models 13C506, 23A206
	Safety Glass	PB40628	Tinted
	Safety Glass	PB40625-3	Clear
	Mask	PE97006	

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TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V17, V18, V19 and V20. Check fuse M1. Check waveform W17.

If Satisfactory	If Unsatisfactory
Check T3, T5A, T6, T7, C86, C87, C88, C89, C90, C91, C93, R106 and other associated components.	Check L22, C80, C81, C84, C85, R99, R100, R101 and other associated components.

INSUFFICENT HIGH VOLTAGE

Check by substitution V18, V19, V21, and V22. Check adjustments R7, B2 and B3. Check C85, R106, T3, T5A and other associated components.

BLOOMING

Check by substitution V18, V19, V20, V21 and V22. Check R7, R106, R114, C85, C93 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

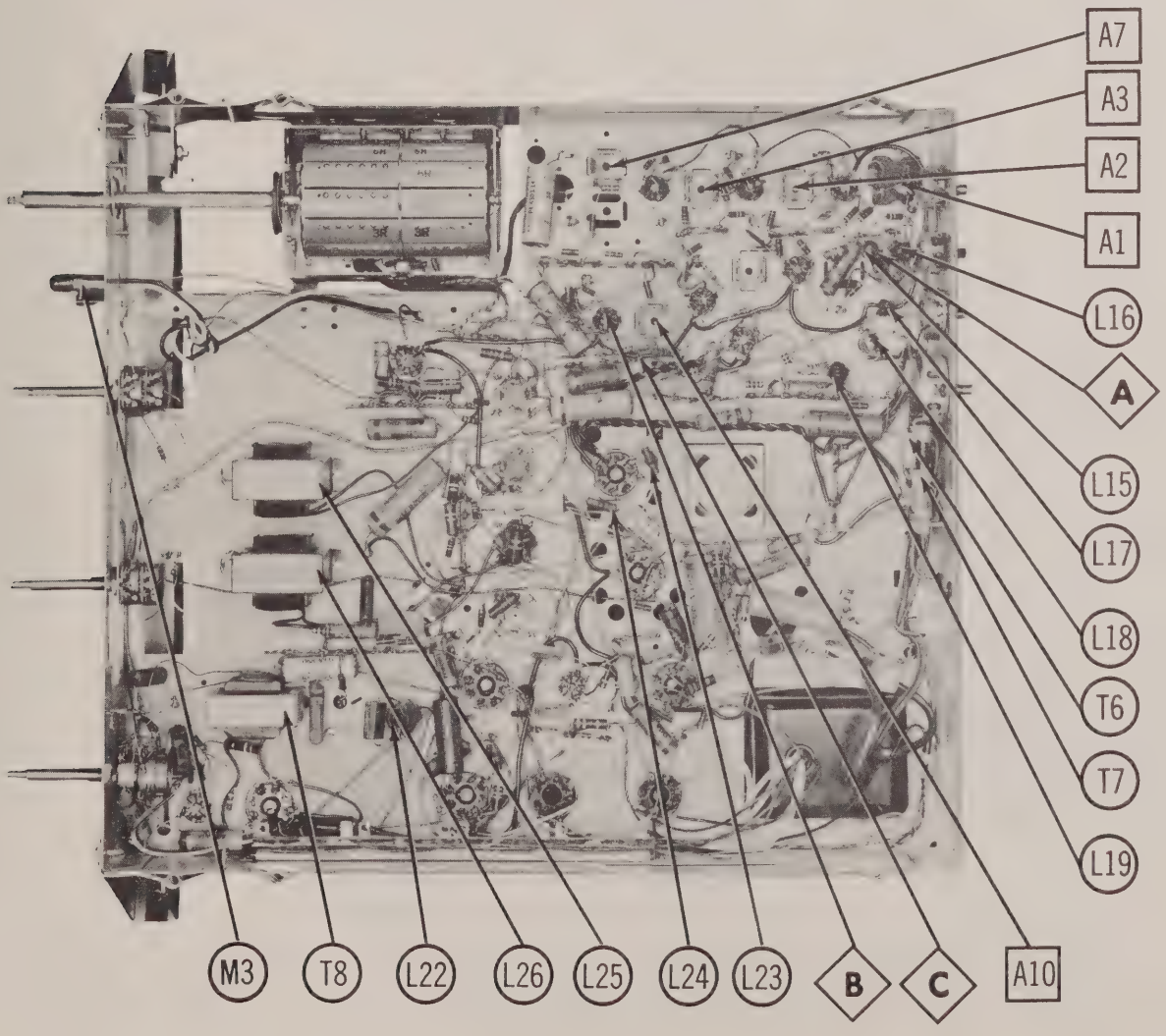
KEYSTONE EFFECT

Check T5 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

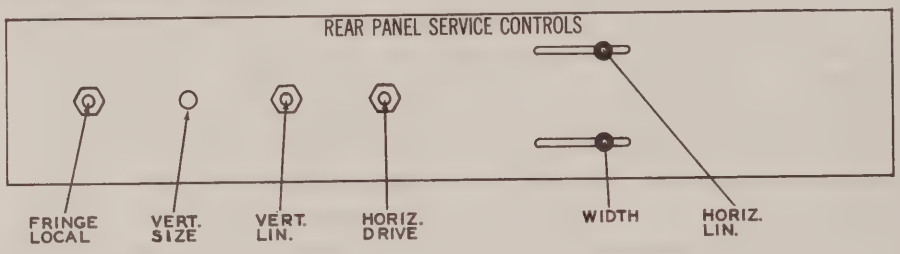
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 6 metal screws holding metal strip with name plate at the bottom of safety glass. Remove metal strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS

FRINGE-LOCAL CONTROL ADJUSTMENT

Set the fringe local control (R4) to its fully counter clockwise position. Tune in the strongest TV station available. Turn the contrast control fully clockwise. If the picture appears normal leave R4 in its fringe position (counter clockwise). If signs of overload are noted turn R4 in a clockwise direction until a normal picture is obtained. Do not turn R4 further clockwise than necessary to obtain a normal picture.

VERTICAL PEAKING CONTROL

For adjustment of the vertical peaking control (R9) it is necessary to remove the rear cover and supply power to the set. R9 should be adjusted using a test pattern.

Decrease the picture vertically using the vertical size control enough to see the top edge of the screen. Adjust R9 for minimum foldover at top of screen. Reset the vertical size control for a picture slightly higher than necessary to fill the picture mask vertically.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A-11) located on top of chassis.

FUSES

One fuse is used for horizontal and vertical sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

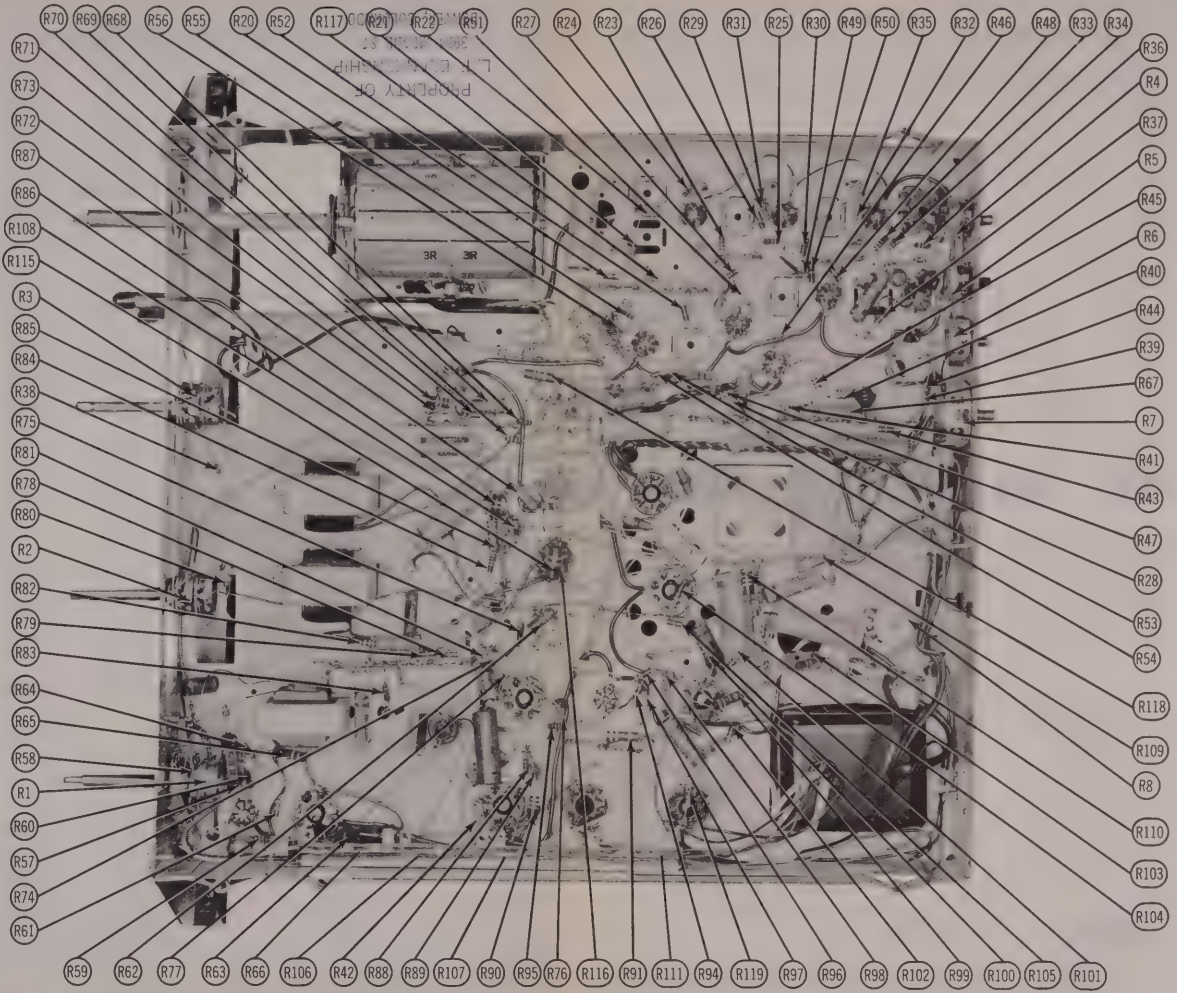
ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 push-on type control knobs from front panel of cabinet.
2. Remove 7 wood screws and 1 metal screw. Remove rear cover.
3. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect speaker leads.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove 2 speakers.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PHOTOFACT* Folder

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WESTINGHOUSE MODELS H-853K24A(S), (V), H-853KU24A, H-854K24A(S), (V), H-854KU24A, H-869K24A(S), (V), H-869KU24A H-870K24A(S), (V), H-870KU24A, H-875T24(S), (V), H-875TU24B, H-876T24B(S), (V), H-876TU24B, H-877T24B(S), (V), H-877TU24B, H-881K24A(S), (V), H-881KU24A, H-888C24(S), (V), H-888CU24, H-889C24(S), (V), H-889CU24 (Ch. V-2318, V-2328 & Radio Ch. V-2189-6)

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MODEL H-888C24 (V)

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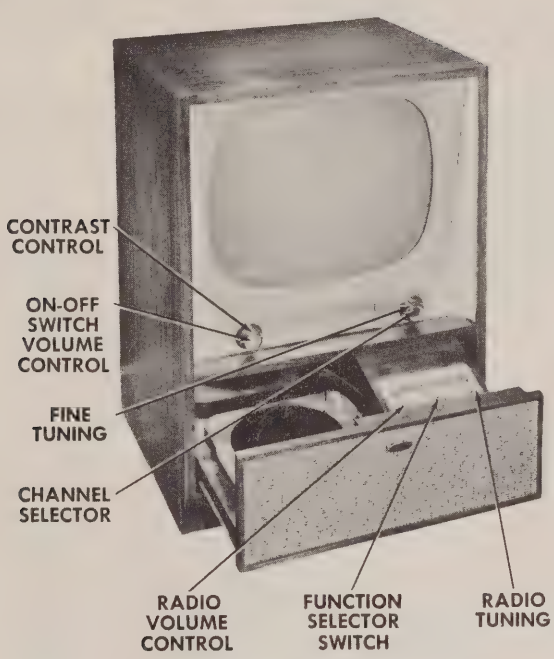

WESTINGHOUSE MODEL H-888C24(V)

TRADE NAME	Westinghouse	MODELS	CHASSIS	TUNER
		H-853K24A(V), H-854K24A(V), H-869K24A(V), H-870K24A(V), H-875T24B, (V), H-876T24B(V), H-877T24B(V), H-881K24A(V)	V-2318-11, -21	V-15460-1
		H-853K24A(S), H-854K24A(S), H-869K24A(S), H-870K24A(S), H-875T24B(S), H-876T24B(S), H-877T24B(S), H-881K24A(S)	V-2318-15, -25	V-14170-2
		H-888C24(V), H-889C24(V)	V-2318-31, -41	V-15460-1 (Radio Ch. V-2189-6)
		H-888C24(S), H-889C24(S)	V-2318-35, -45	V-14170-2 (Radio Ch. V-2189-6)
		H-853KU24A, H-854KU24A, H-869KU24A, H-870KU24A, H-875TU24B, H-876TU24B, H-877TU24B, H-881KU24A	V-2328-101, -201	V-14130-1
		H-888CU24, H-889CU24	V-2328-301, 401	V-14130-1 (Radio Ch. V2189-6)

MANUFACTURER	Westinghouse Electric Corp., Television & Radio Division, Metuchen, N. J.
TYPE SET	TV-Radio-Phono Combination
TUBES	Twenty-Four
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.03 Amp. @ 117 Volts AC
TV TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)
RADIO TUNING RANGE	Radio 540-1625KC, AM IF 455KC

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FOR SERVICE INFORMATION ON RECORD CHANGER V-9840-5, SEE SIMILAR VM950, PHOTOFACT SET 216, FOLDER 11. ALSO SEE RECORD CHANGER MANUAL CM-5.

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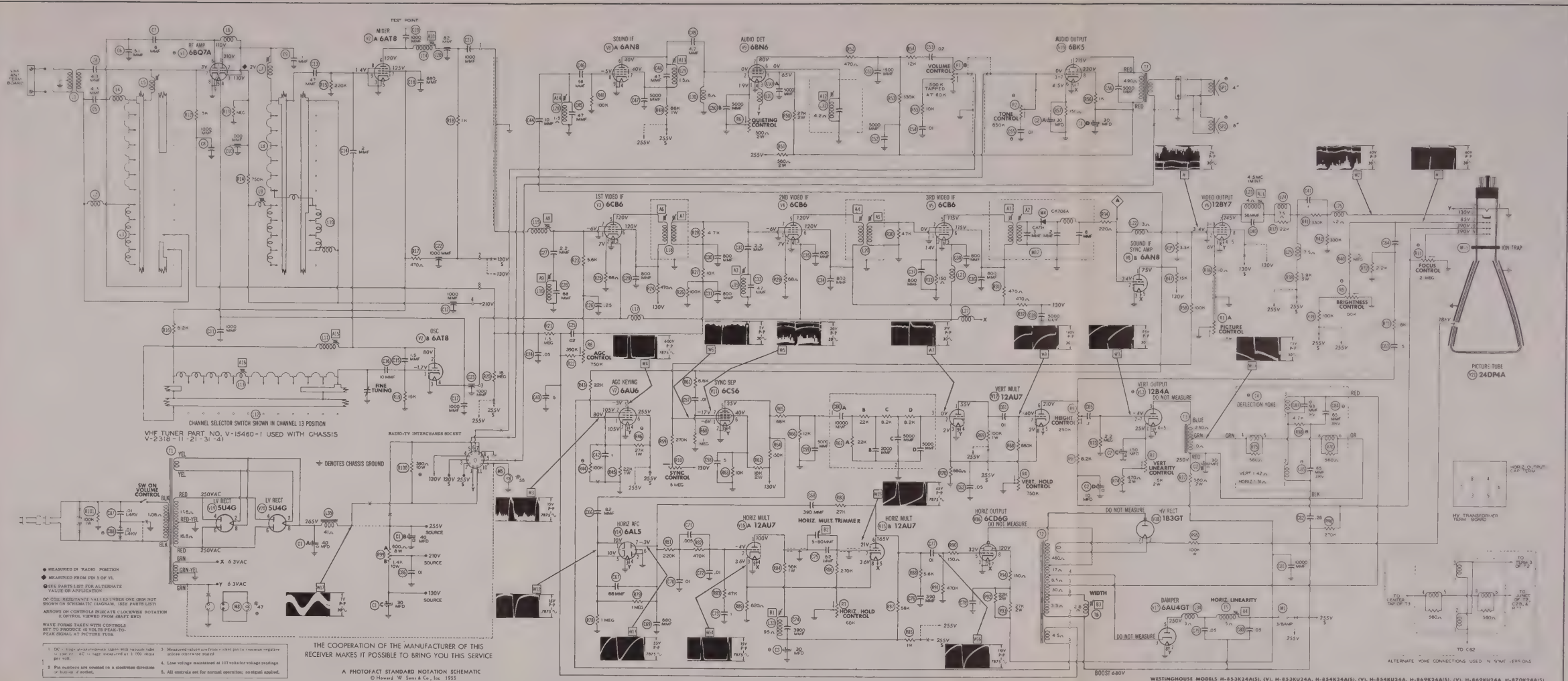
RF AMP V1 6BQ7A
MIXER V2 A 6AT8
OSC V2 B 6AT8
SOUND IF V8 A 6AN8
AUDIO DET V5 6BN6
AUDIO OUTPUT V10 6BK5
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO OUTPUT V6 12BY7
SOUND IF SYNC AMP V8 B 6AN8
AGC KEYING V7 6AU6
SYNC SEP V11 6CS6
VERT MULT V12 12AU7
VERT OUTPUT V13 12B4A
HORIZ AFC V14 6AL5
HORIZ MULT V15 A 12AU7
HORIZ MULT V15 B 12AU7
HORIZ OUTPUT V16 6CD6G
HV RECT V18 1B3GT
DAMPER V17 6AU4GT
LV RECT V19 5U4G
LV RECT V20 5U4G
PICTURE TUBE V21 24DP4A
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF TUNER PART NO. V-15460-1 USED WITH CHASSIS V-2318-11-21-31-41
RADIO-TV INTERCHANGE SOCKET
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
AGC CONTROL
SYNC CONTROL
FINE TUNING
QUIETING CONTROL
VOLUME CONTROL
TONE CONTROL
FOCUS CONTROL
BRIGHTNESS CONTROL
PICTURE CONTROL
HEIGHT CONTROL
VERT LINEARITY CONTROL
VERT. HOLD CONTROL
HORIZ. MULT. TRIMMER
HORIZ. HOLD CONTROL
WIDTH
HORIZ. LINEARITY
ION TRAP
DEFLECTION YOKE
HV TRANSFORMER TERM BOARD
ALTERNATE YOKE CONNECTIONS USED IN SOME VERSIONS
DO NOT MEASURE
BOOST 680V
● MEASURED IN "RADIO" POSITION
◆ MEASURED FROM PIN 3 OF V1.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 40 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC & signal measurements taken with vacuum tube voltmeter. AC voltage measured at 1,000 ohms per volt.
2 Pin numbers are counted in a clockwise direction on bottom of socket.
3 Measured values are from chassis pin to common negative unless otherwise stated
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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WESTINGHOUSE MODELS H-853K24A(5), (V), H-853KU24A, H-854K24A(5), (V), H-854KU24A, H-869K24A(5), (V), H-869KU24A, H-870K24A(5), (V), H-870KU24A, H-875T24(5), (V), H-875TU24B, H-876T24B(5), (V), H-876TU24B, H-877T24B(5), (V), H-877TU24B, H-881K24A(5), (V), H-881KU24A, H-888C24(5), (V), H-888CU24, H-889C24(5), (V), H-889CU24 (Ch. V-2318, V-2328 & Radio Ch. V-2189-6)

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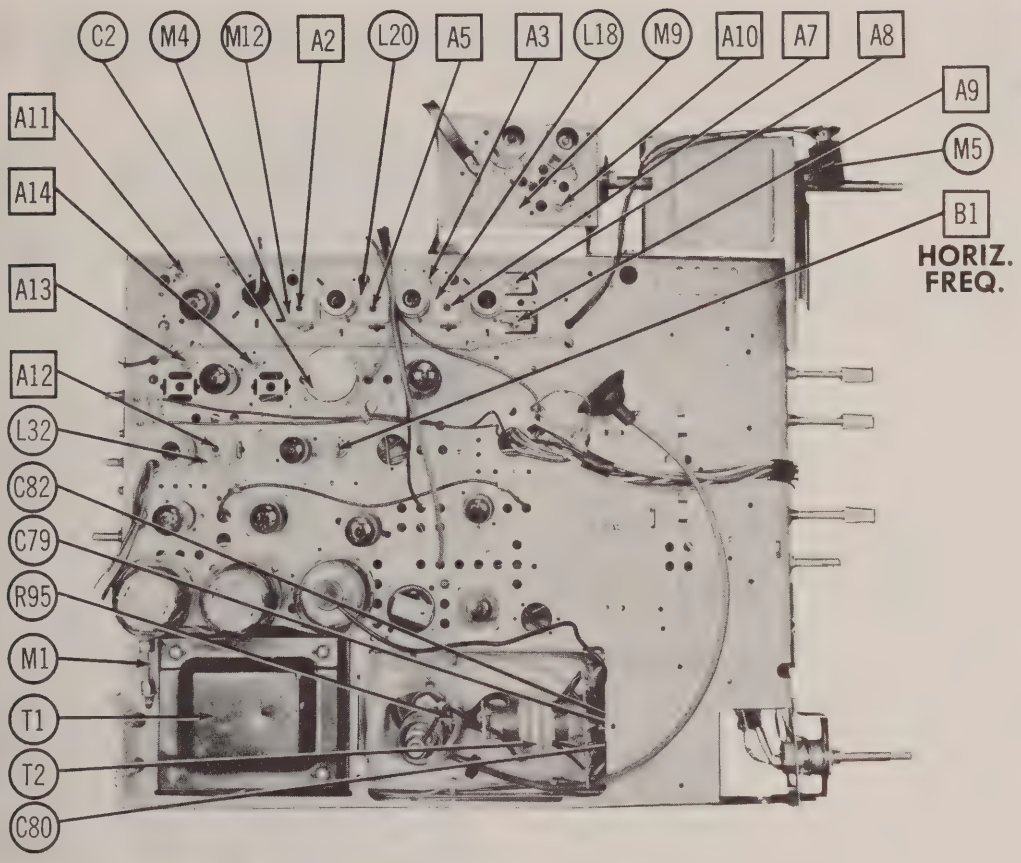
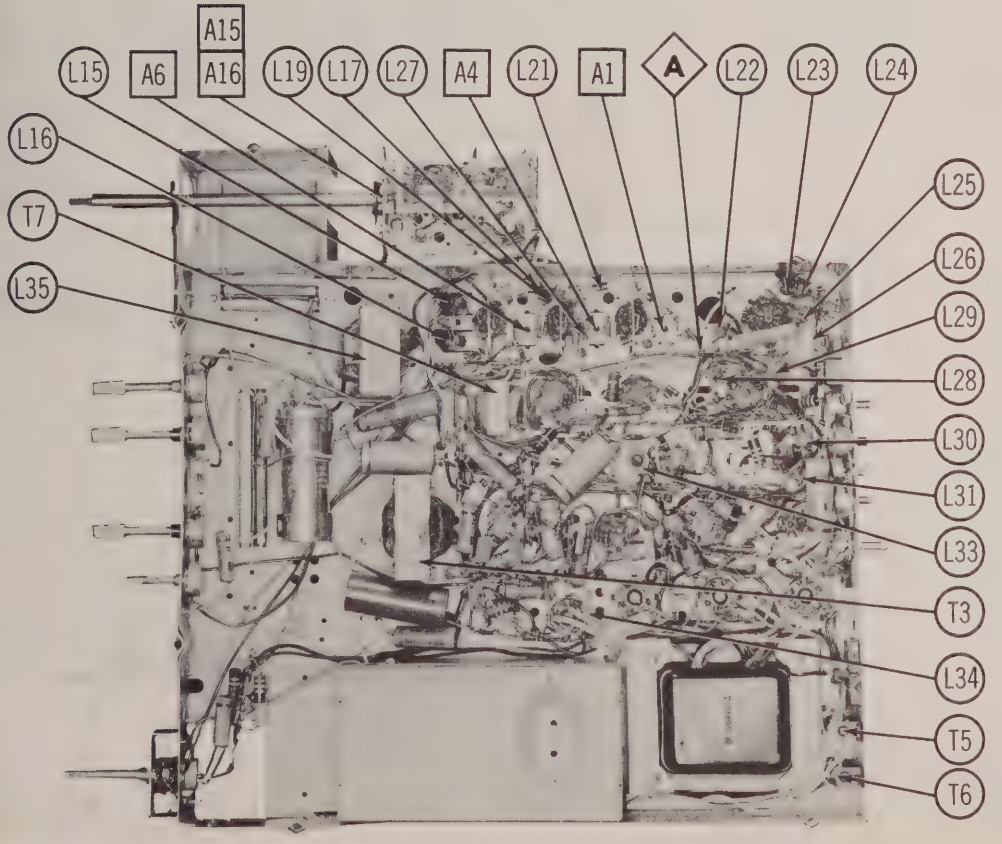
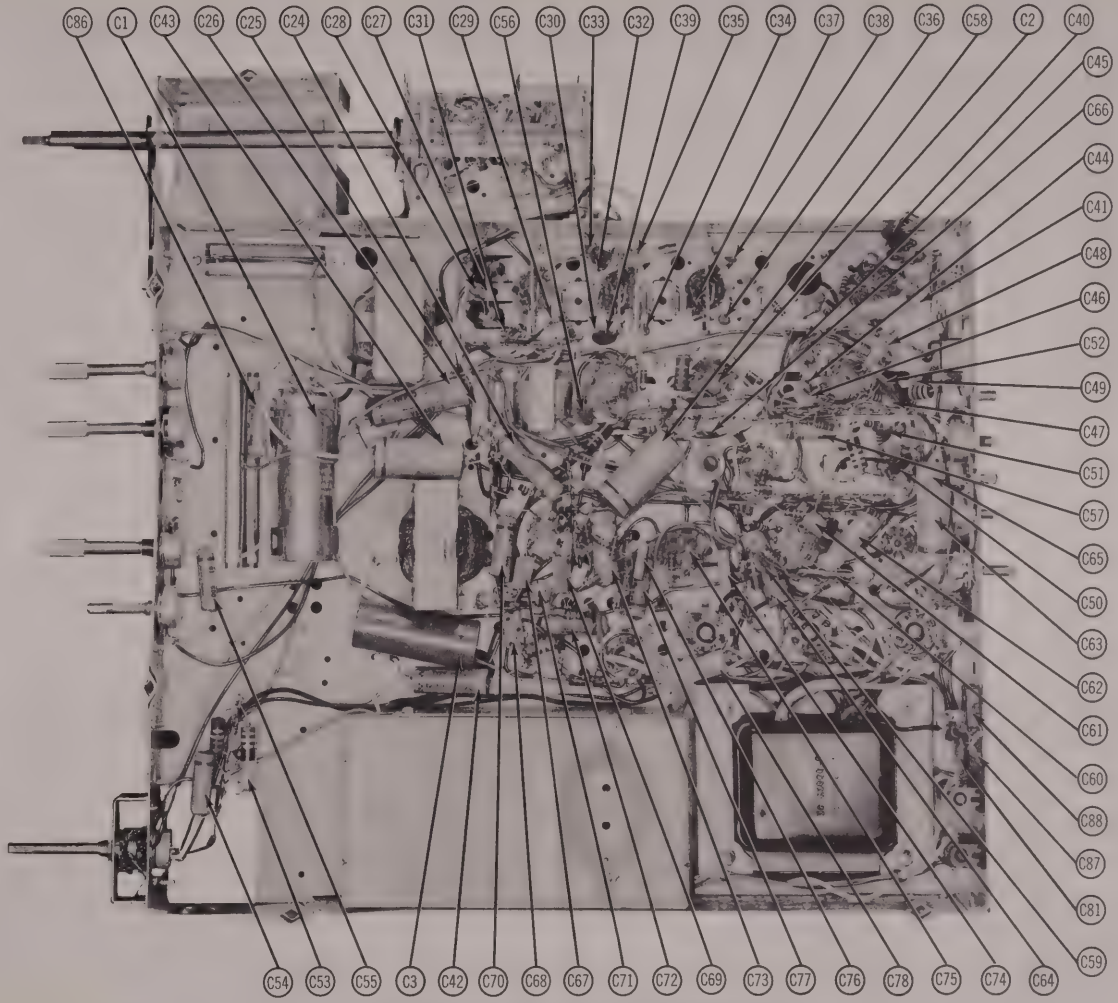


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

WESTINGHOUSE MODELS H-853K24A(S), (V), H-853KU24A, H-854K24A(S), (V), H-854KU24A, H-869K24A(S), (V), H-869KU24A, H-870K24A(S), (V), H-870KU24A, H-875T24(S), (V), H-875TU24B, H-876T24B(S), (V), H-876TU24B, H-877T24B(S), (V), H-877TU24B, H-881K24A(S), (V), H-881KU24A, H-888C24(S), (V), H-888CU24, H-889C24(S), (V), H-889CU24 (Ch. V-2318. V-2328 & Radio Ch. V-2189-6)

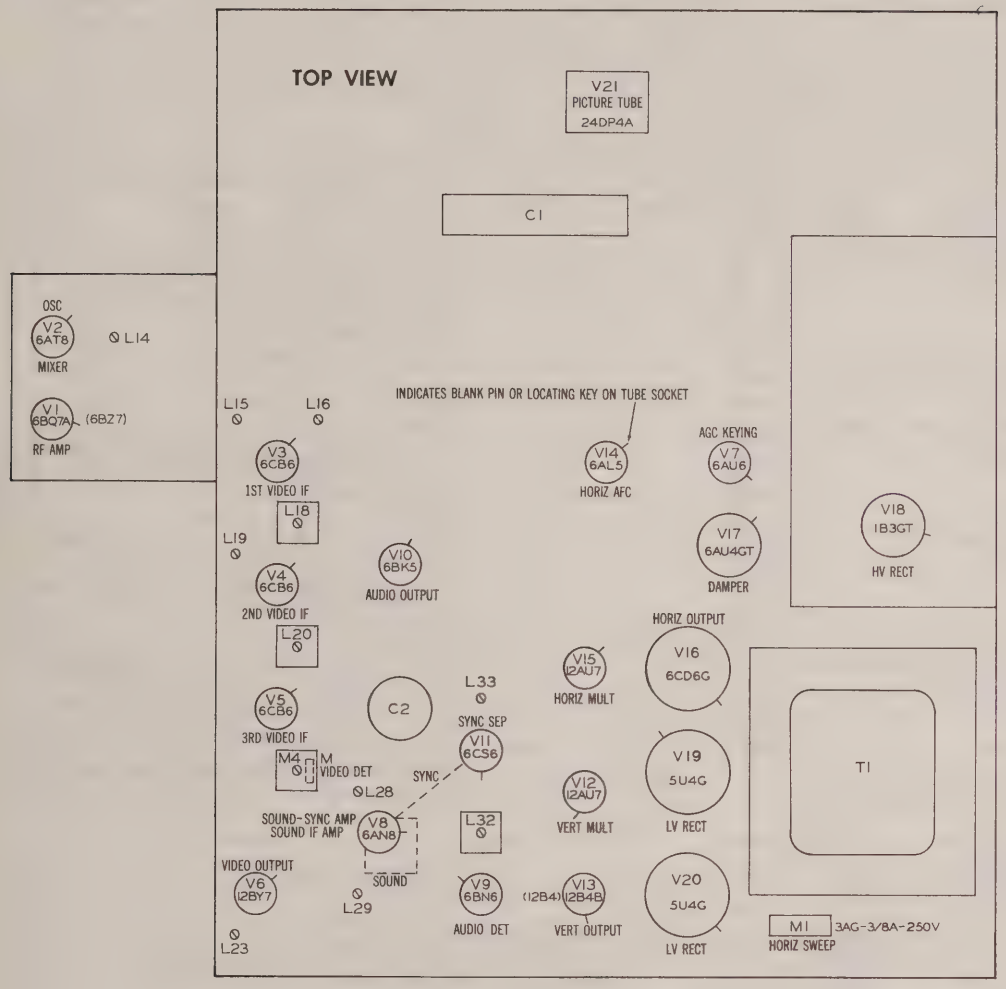


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

L. F.
DENVER, COLORADO

WESTINGHOUSE MODELS H-853K24A(S), (V); H-853KU24A, H-854K24A(S), (V); H-854KU24A, H-869K24A(S), (V); H-869KU24A, H-870K24A(S), (V), H-870KU24A, H-875T24(S), (V), H-875TU24B, H-876T24(S), (V), H-876TU24B, H-877T24B(S), (V), H-877TU24B, H-881K24A(S), (V), H-881KU24A, H-888C24(S), (V), H-888CU24, H-889C24(S), (V), H-889CU24 (Ch. V-2318, V-2328 & Radio Ch. V-2189-6)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19, V20

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster -V2, V3, V4, V5
No pic, no sound, has snow -V1, V2, V3
No pic, has sound, has raster - V6, V7, V21
Has pic, no sound - V8. V9, V10
Overloaded picture -V7

SYNC FAILURE
No vert. sync -V11, V12
No horiz. sync - V11, V14, V15
No vert. or horiz. sync - V8, V11

SWEEP FAILURE
No raster, has sound -V15, V16, V17, V18, V21, Fuse (M1)
No vertical deflection - V12, V13
Poor vert. linearity or foldover -V12, V13
Poor horiz. linearity or foldover -V15, V16, V17
Narrow picture -V15, V16, V17, V18, V19, V20
Vert. off freq. -V11, V12
Horiz. off freq. - V11, V14, V15

WESTINGHOUSE MODELS H-853K24A(S), (V), H-853KU24A, H-854K24A(S), (V), H-854KU24A, H-869K24A(S), (V), H-869KU24A, H-870K24A(S), (V), H-870KU24A, H-875T24(S), (V), H-875TU24B, H-876T24B(S), (V), H-876TU24B, H-877T24B(S), (V), H-877TU24B, H-881K24A(S), (V), H-881KU24A, H-888C24(S), (V), H-888CU24, H-889C24(S), (V), H-889CU24 (Ch. V-2318, V-2328 & Radio Ch. V-2189-6)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from chassis. Do not remove the horizontal multivibrator tube (V18) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove V1 from its socket to avoid possibility of undesirable beat response during alignment. Rotate channel selector knob to channel 13.
Connect a 470MMF capacitor across vertical input terminals of the scope.
Connect the negative side of a 9 volt bias supply to the ungrounded side of C43. Connect the positive lead to chassis. If a separate marker generator is used couple it loosely to sweep generator output cable.
If peaks appear at two different slug settings, use the one at farthest counter-clockwise position.
Use high scope gain and only enough sweep generator output to provide useable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. Direct	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis near V5.	44MC (10MC Swp)	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	13	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A1, A2	Attach detuning clips (see alligator clips) to pin 5 (plate) of V3 and V4. Adjust A1 for maximum response at 44MC. Adjust A2 for symmetrical response curve with markers as shown in Fig. 1. Remove detuning clips from V3 and V4.
2. .02MFD	High side to pin 1 (grid) of V3. Low side to chassis near V3.	Not used	47.25MC (Unmod)	"	"	A3	Adjust for MINIMUM response on scope.
3. Direct	High side to pin 1 (grid) of V4. Low side to chassis near V4.	44MC (10MC Swp)	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	"	"	A4, A5	Attach detuning clip to pin 5 of V3. Adjust A5 for maximum gain at 44MC. Adjust A5 for symmetrical response with marker as shown in Fig. 2. Remove detuning clip from V3.
4. "	High side to pin 1 (grid) of V3. Low side to chassis near V3.	"	41.25MC 42.25MC 43.0MC 44.0MC 45.0MC 45.75MC 47.25MC	"	"	A6, A7, A10	Detune A10 on tuner several turns counter clockwise. Adjust A6 for maximum response at 44MC. Adjust A7 for symmetrical response with markers as shown in Fig. 3. Adjust A10 so that dip it produces on response curve is centered at 44MC. Replace V1 in tuner.
5. "	Thru matching network (Fig. 5) across antenna terminals. Keep leads as short as possible.	213MC (10MC Swp)	41.25MC 42.25MC 43.0MC 44.0MC 45.0MC 45.75MC 47.25MC	"	"	A8, A9	Set fine tuning control to its mid-range position. Clip the high side of the marker generator to the converter ungrounded tube shield. Leave low side disconnected. Adjust A8 for symmetrical response as shown in Fig. 4. Adjust A9 for MINIMUM marker amplitude at 41.25MC. Response curve should be satisfactory on all other channels.

4.5MC TRAP ALIGNMENT

Set contrast control for maximum contrast.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6. .001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any unused channel.	DC probe thru detector (Fig. 6) to pin 11 cathode of picture tube.	A11	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7. .001MFD	High side to point (A). Low side to chassis.	4.5MC (15KC Swp.)	4.5MC	Any unused channel.	Vert. Amp. across volume control.	A13	Set generator for a strong signal and adjust A13 for maximum response at 4.5MC.
8. "	"	"	"	"	"	A15, A14	Set generator to give MINIMUM useful indication on scope. Adjust A13 and A14 for maximum response centered about 4.5MC. Retouch A13 for maximum response at 4.5MC.
9. "	"	Not used	4.5MC (400% Mod.)	"	"	R6	Starting with very low signal input gradually increase the signal at the same time rotating the quieting control (R6) back and forth until the signal level reaches the point where the AM output on scope dips to zero with a rise on each side as R6 is rotated. Set R6 for zero output at this signal level.

SOUND IF ALIGNMENT USING TV SIGNAL

Tune the receiver to a TV station and connect an attenuator between receiver and antenna so that signal input to receiver may be varied from weak to strong.
Set the quieting control (R6) to its mid-range position. Apply a strong signal and adjust A12 for maximum program sound. If two widely separated peaks appear use the one with A12 farthest counter-clockwise. If two peaks occur within a narrow range of adjustment, the signal strength being applied is too low or the quieting control is improperly adjusted. Reduce the signal to its lowest useable level and adjust A12, A13 and A14 for maximum program sound. If two peaks appear at different slug settings use the one at farthest counter clockwise position.
Readjust the signal input to its lowest useable level and recheck settings of A13 and A14. Apply a very weak signal and adjust R6 for minimum noise. Do not leave R6 at maximum counter-clockwise position.

OSCILLATOR ALIGNMENT FOR TUNER V-15460-1

Set the fine tuning control to the center of its range. This is indicated by the slot in the shaft being straight up and down.
Set the channel selector to the highest high band channel (7-13) station operating in that area. Adjust the high band oscillator adjustment (A15) for best picture detail.
Set the channel selector switch to the highest low band channel (2-6) operating in that area. Adjust the low band oscillator adjustment (A16) for best picture detail. Recheck the setting of A15 and if it has changed repeat entire procedure.

RF AND MIXER ALIGNMENT FOR TUNER V-15460-1

The RF and Mixer portion of this tuner has been properly aligned at the factory and is very stable. Alignment of this portion is not recommended in the field.

VHF OSCILLATOR ALIGNMENT FOR TUNER V-14130-1

Set the fine tuning control to the center of its range. This is indicated by the slot in the shaft being straight up and down. Set the channel selector to the highest high band channel (7-13) station operating in that area. Adjust the high band oscillator adjustment (A15) for best picture detail. Set the channel selector switch to the highest low band channel (2-6) operating in that area. Adjust the low band oscillator adjustment (A16) for best picture detail. Recheck the setting of A15 and if it has changed repeat entire procedure.

VHF RF AND MIXER ALIGNMENT FOR TUNER V-14130-1

The RF and Mixer Alignment portion of this tuner has been properly aligned at the factory and is very stable. Alignment of this portion is not recommended in the field.

FIG. 1

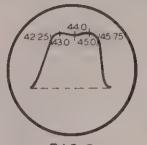


FIG. 2

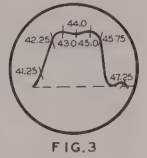


FIG. 3

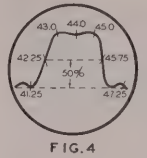
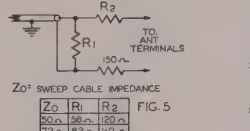


FIG. 4



Zo	R1	R2
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω

FIG. 5

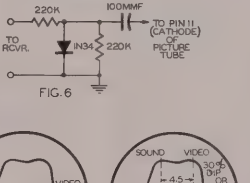


FIG. 6

FIG. 7

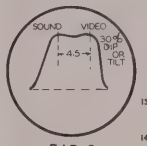


FIG. 8

ALIGNMENT FOR UHF PORTION OF TUNER V-14130-1

In the event the UHF oscillator tube is replaced, it is recommended that several tubes be tried and the one which works best should be used.
Alignment of the tuner should not be required in the field.

OSCILLATOR ALIGNMENT FOR TUNER V-14170-2

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A17. It should be noted that this is an all channel oscillator adjustment and should not be used to correct any one channel. If A17 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip that is off frequency. The channel oscillator adjustments are reached thru a hole just above the channel switch shaft. The correct adjustment screw is accesible thru this hole as the channel switch is turned to each channel. Disconnect the white wire (AGC bass) from tuner terminal "D". Connect the negative side of a 1.5 volt battery to this terminal. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.
Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10. Fig. 5	Thru matching network (Fig. 5) across antenna terminals.	213MC (10MC Swp.)	211.25MC	13	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A18	Adjust to place sound marker in trap notch as in Fig. 7. Video marker should be at 50%.
		207MC (10MC Swp.)	205.25MC 206.75MC	12		A19	
		201MC (10MC Swp.)	199.25MC 200.75MC	11		A20	
		195MC (10MC Swp.)	193.25MC 194.75MC	10		A21	
		189MC (10MC Swp.)	187.25MC 188.75MC	9		A22	
		183MC (10MC Swp.)	181.25MC 182.75MC	8		A23	
		177MC (10MC Swp.)	175.25MC 176.75MC	7		A24	
		85MC (10MC Swp.)	83.25MC 84.75MC	6		A25	
		79MC (10MC Swp.)	77.25MC 78.75MC	5		A26	
		69MC (10MC Swp.)	67.25MC 68.75MC	4		A27	
		63MC (10MC Swp.)	61.25MC 62.75MC	3		A28	
		57MC (10MC Swp.)	55.25MC 56.75MC	2		A29	

RF AND MIXER ALIGNMENT FOR TUNER V-14170-2

Note: The series resonant trap (A33) should be adjusted in the field whenever local interference on channel 2 is encountered.
Connect bias as under "Oscillator Alignment For Tuner V-14170-2."
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50Ω.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11. Fig. 5	Thru matching network (Fig. 5) across antenna terminals.	207MC (12MC Swp.)	205.25MC 206.75MC	13	Vert. Amp. thru 10KΩ to point (B). Low side to tuner chassis.	A30 A31 A32	Adjust for response similar to Fig. 8 with markers above 80%.
12. "	"	213MC (12MC Swp.)	211.25MC 215.75MC	13	"		If markers fall below 70% on any channel make compromise adjustment of A30, A31, and A32 with channel switch set to that channel, then check all other channels to see that they have not been seriously affected. Restore tuner AGC lead to terminal "D" and remove bias battery.
		201MC (12MC Swp.)	198.25MC 203.75MC	11			
		195MC (12MC Swp.)	193.25MC 197.75MC	10			
		189MC (12MC Swp.)	187.25MC 191.75MC	9			
		183MC (12MC Swp.)	181.25MC 185.75MC	8			
		177MC (12MC Swp.)	175.25MC 179.75MC	7			
		83MC (12MC Swp.)	81.25MC 87.75MC	6			
		79MC (12MC Swp.)	77.25MC 81.75MC	5			
		69MC (12MC Swp.)	67.25MC 71.75MC	4			
		63MC (12MC Swp.)	61.25MC 65.75MC	3			
		57MC (12MC Swp.)	55.25MC 59.75MC	2			

RADIO ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13. .1MFD	High side to antenna terminal log on tuning gang. Low side to chassis.	455KC (400% Mod.	Radio	Tuning gang fully open.	Across Voice Coil	A34, A35 A36, A37	Adjust for maximum output.
14. "	"	1630KC	"	"		A38	"
15.	Loop (radiated)	1400KC		1400KC	"	A39	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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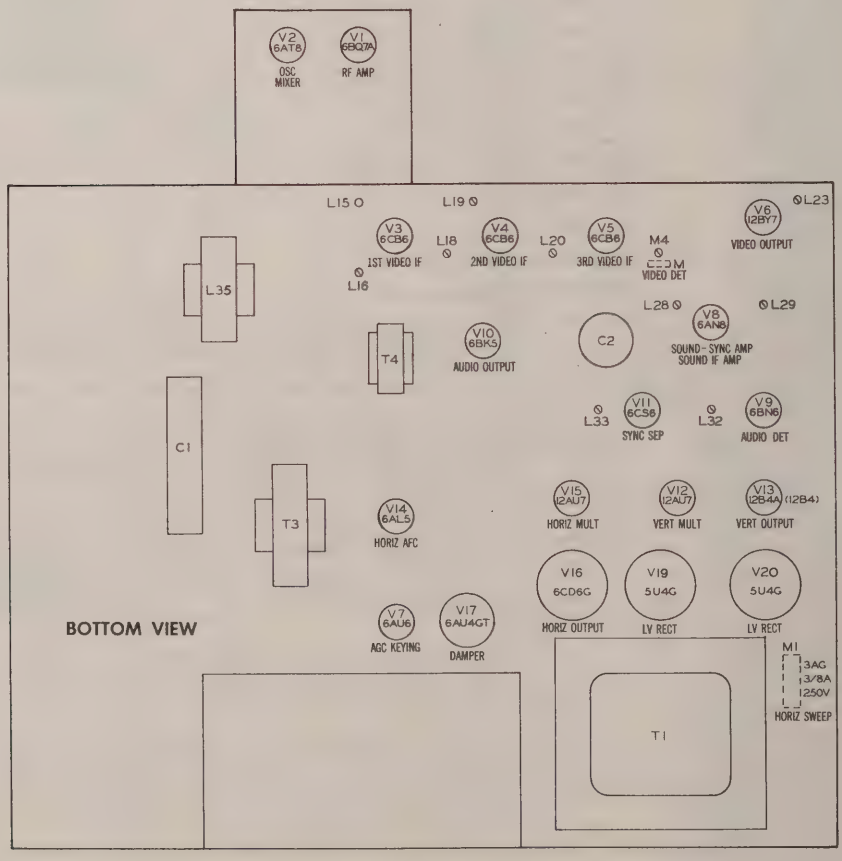
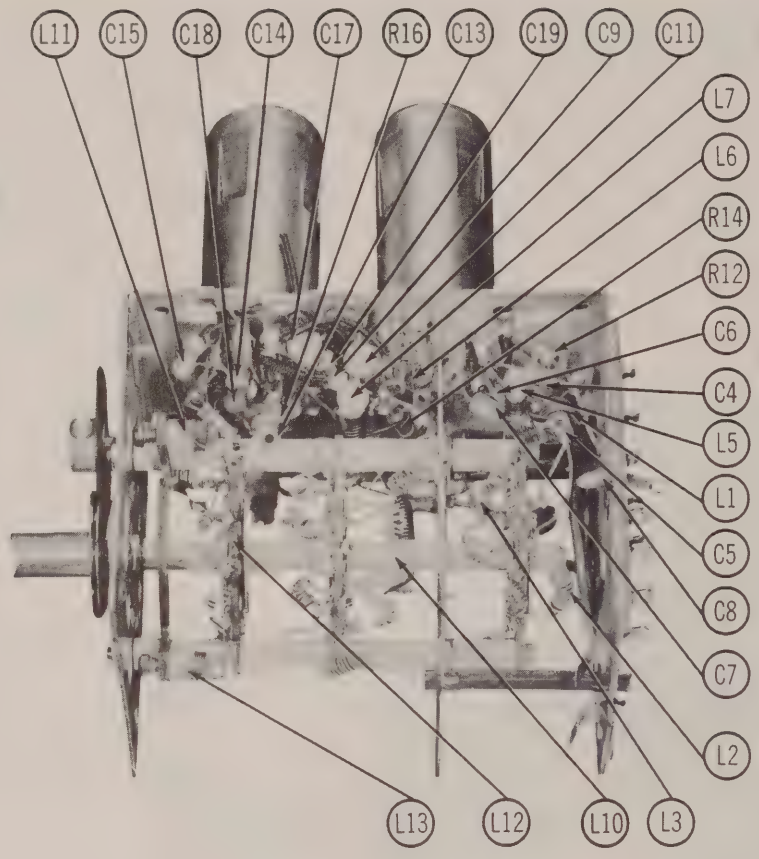
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	†650Ω	500KΩ	Inf.	.1Ω	0Ω	Inf.	1.8Meg	0Ω	0Ω
V 2	6AT8	15KΩ	†11KΩ	0Ω	.1Ω	0Ω	†3KΩ	†2.5KΩ	0Ω	220KΩ
V 3	6CB6	100KΩ	68Ω	.1Ω	0Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 4	6CB6	100KΩ	68Ω	.1Ω	0Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 5	6CB6	.3Ω	150Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 6	12BY7	200Ω	3.3KΩ	0Ω	.1Ω	.1Ω	0Ω	†4KΩ	†2KΩ	0Ω
V 7	6AU6	†40KΩ	†15KΩ	0Ω	.1Ω	500KΩ	†41Ω	†15KΩ		
V 8	6AN8	†17KΩ	3.3KΩ	0Ω	0Ω	.1Ω	†68KΩ	†68KΩ	100KΩ	0Ω
V 9	6BN6	300Ω	8Ω	.1Ω	0Ω	†27KΩ	4.2Ω	†330KΩ		
V 10	6BK5	†1.1KΩ	NC	100KΩ	.1Ω	0Ω	150Ω	100KΩ	†1.6KΩ	TP
V 11	6CS6	100KΩ	0Ω	0Ω	.1Ω	†65KΩ	†10KΩ	1Meg		
V 12	12AU7	†100KΩ	60KΩ	680Ω	.1Ω	.1Ω	▲500KΩ	1.2Meg	680Ω	0Ω
V 13	12B4A	900Ω	2.2Meg	0Ω	.1Ω	.1Ω	NC	2.2Meg	NC	†900Ω
V 14	6AL5	1Meg	0Ω	0Ω	.1Ω	1Meg	0Ω	2Meg		
V 15	12AU7	†57KΩ	2.7Meg	820Ω	.1Ω	.1Ω	†57KΩ	330KΩ	820Ω	0Ω
V 16	6CD6G	NC	0Ω	0Ω	NC	470KΩ	NC	.1Ω	†13KΩ	TOP CAP ▲17Ω
V 17	6AU4GT	NC	TP	650KΩ	NC	†65Ω	TP	.1Ω	0Ω	
V 18	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲480Ω
V 19	5U4G	NC	13KΩ	NC	18Ω	NC	17Ω	NC	13KΩ	
V 20	5U4G	NC	13KΩ	NC	18Ω	NC	17Ω	NC	13KΩ	
V 21	24DP4A	0Ω	†1.6Meg	PIN 6 ▲300KΩ	PIN 10 ▲270KΩ	PIN 11 †180KΩ	PIN 12 .1Ω			
V 22	6BE6	22KΩ	1Ω	0Ω	♦.1Ω	♦†2.4KΩ	♦†2.4KΩ	♦4Meg		
V 23	6BA6	♦4Meg	0Ω	.1Ω	0Ω	♦†2.4KΩ	♦†2.4KΩ	68Ω		
V 24	6AV6	6.8Meg	0Ω	.1Ω	0Ω	♦500KΩ	0Ω	♦†100KΩ		

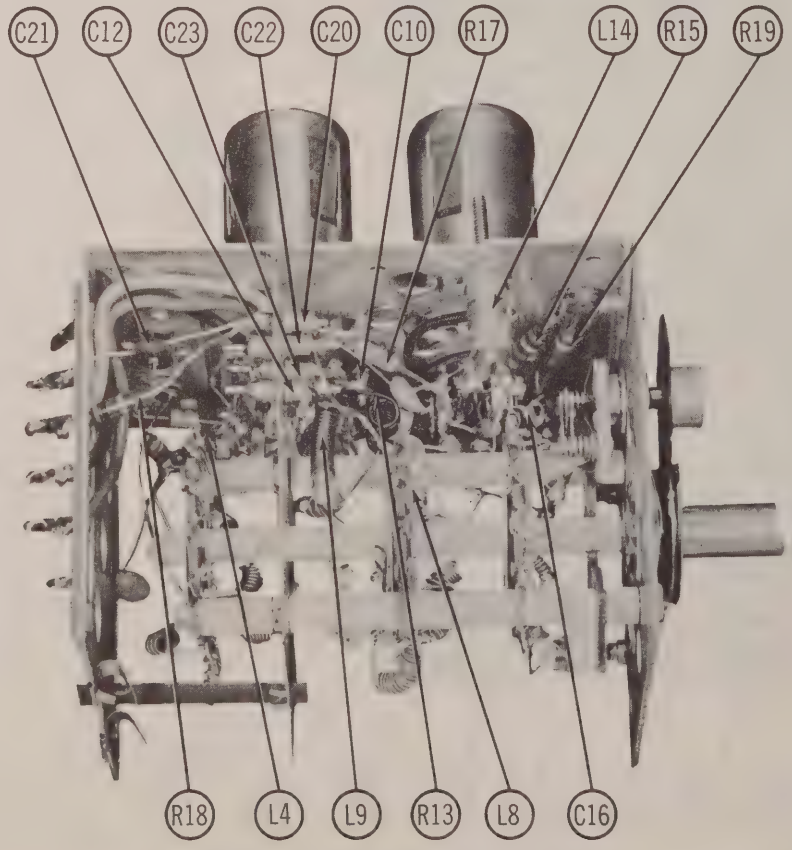
♦MEASURED IN RADIO POSITION.
†MEASURED FROM PIN 8 OF V23.
▲MEASURED FROM PIN 3 OF V17.
NC-NO CONNECTION.
TP-TIE POINT.



TUBE PLACEMENT CHART

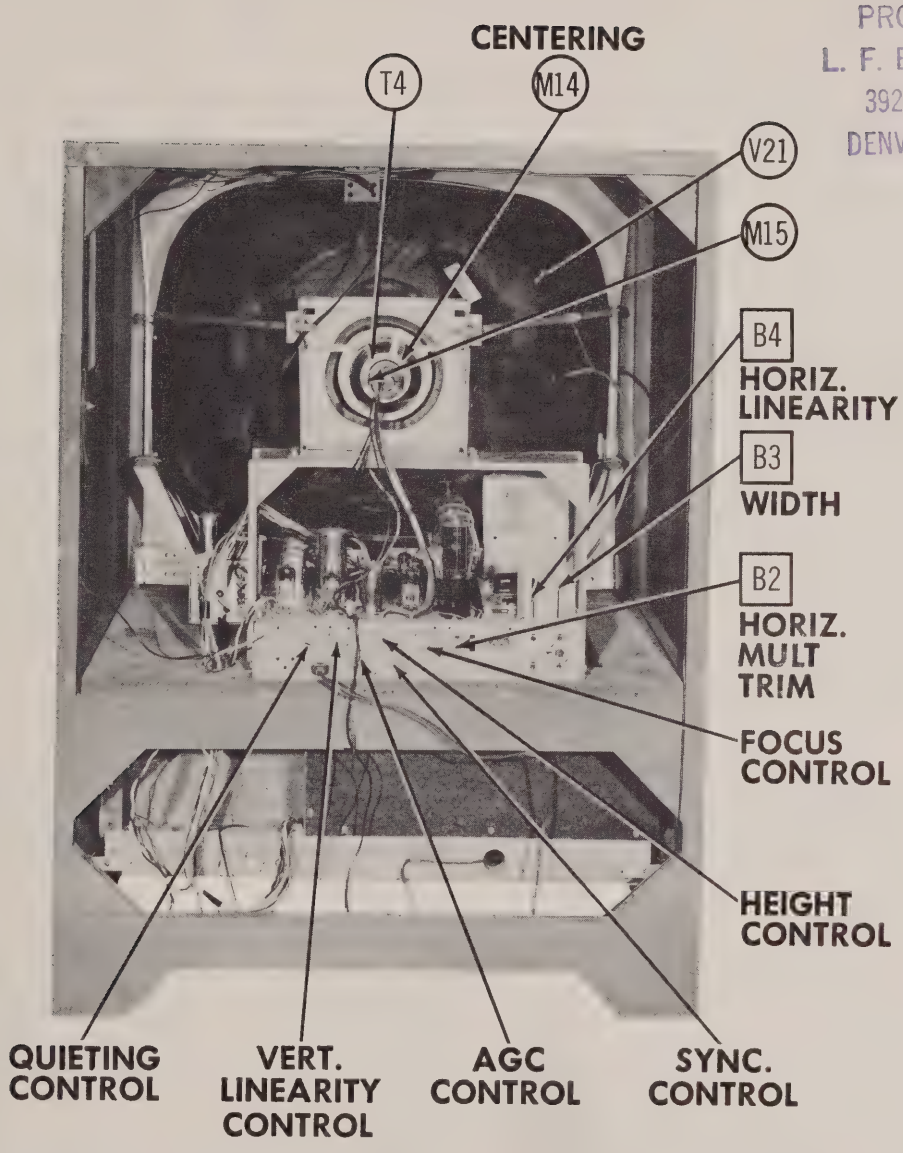


RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

① Set the horizontal hold control to its mid-range position.

② Connect a short jumper across L33.

③ Connect the DC probe of VTVM to pin 2 (grid) of V15. Connect common lead to chassis. Adjust horizontal range trimmer (B2) for zero volts on VTVM. If necessary, readjust horizontal hold control slightly to obtain zero reading on VTVM.

④ Remove jumper from L33 and adjust B1 for zero reading on VTVM. Switch off channel and back again. Picture should pull into sync.

Adjust the horizontal width slug (B3) for a picture that is slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage."

INSUFFICIENT SWEEP

Check by substitution V16, V17, V19 and V20. Check adjustments B3 and B4. Check T2, T4A, C77, C76, R92, R93 and other associated components.

DRIVE LINES

Check by substitution V16 and V17. Check adjustment B4. Check C77, R92, R93, T2, T4A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V16 and V17. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines."

PIE CRUST EFFECT

Check by substitution V15, V16 and V17. Check C72 for open. Check L33, C70, C71, R82 and other associated components.

XMAS TREE EFFECT

Check by substitution V15, V16 and V17. Check T2 and T4 for internal arcing. Check L33, C74, C67, C68, R89 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V12 and V13. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check T3, T4B, C2B, C81, R77 and other associated components	Check R69, R97, R9, C61, C65 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V12 and V13. Check height and vertical linearity controls for proper operation. Check R97, T3 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V12 and V13. Check R9, R97, C61, C65 and other associated components.

COMPRESSED AT TOP

Check by substitution V12 and V13. Check R74, R7, C2C, C65, T3 and other associated components.

FOLDS

Check by substitution V12 and V13. Check C63, R71, R72, T3, T4B and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V11. Check C57, R62, R64 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V12. Check vertical integrator network. Check C61, C62, R70, R68 and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V14 and V15. Check C66, C69, C70, C71, C72, R82, L33 and other associated components.

HORIZONTAL BENDING

Check by substitution V11, V14 and V15. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C40, C41, R36, R38, L25, L26 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A-11. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check contrast control. Check L24, R39, C41 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check picture tube. Check L24, C41 and other associated components.

SMEAR

Substitute V6. Check L22, L24, L26, C41 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9 and V10. Check stages V9 and V10 using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check audio detector and audio IF stages for component failure or change of value.	Check C53, C56, R51, R54, R52, R56, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments A12 and R6 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or no Sound."

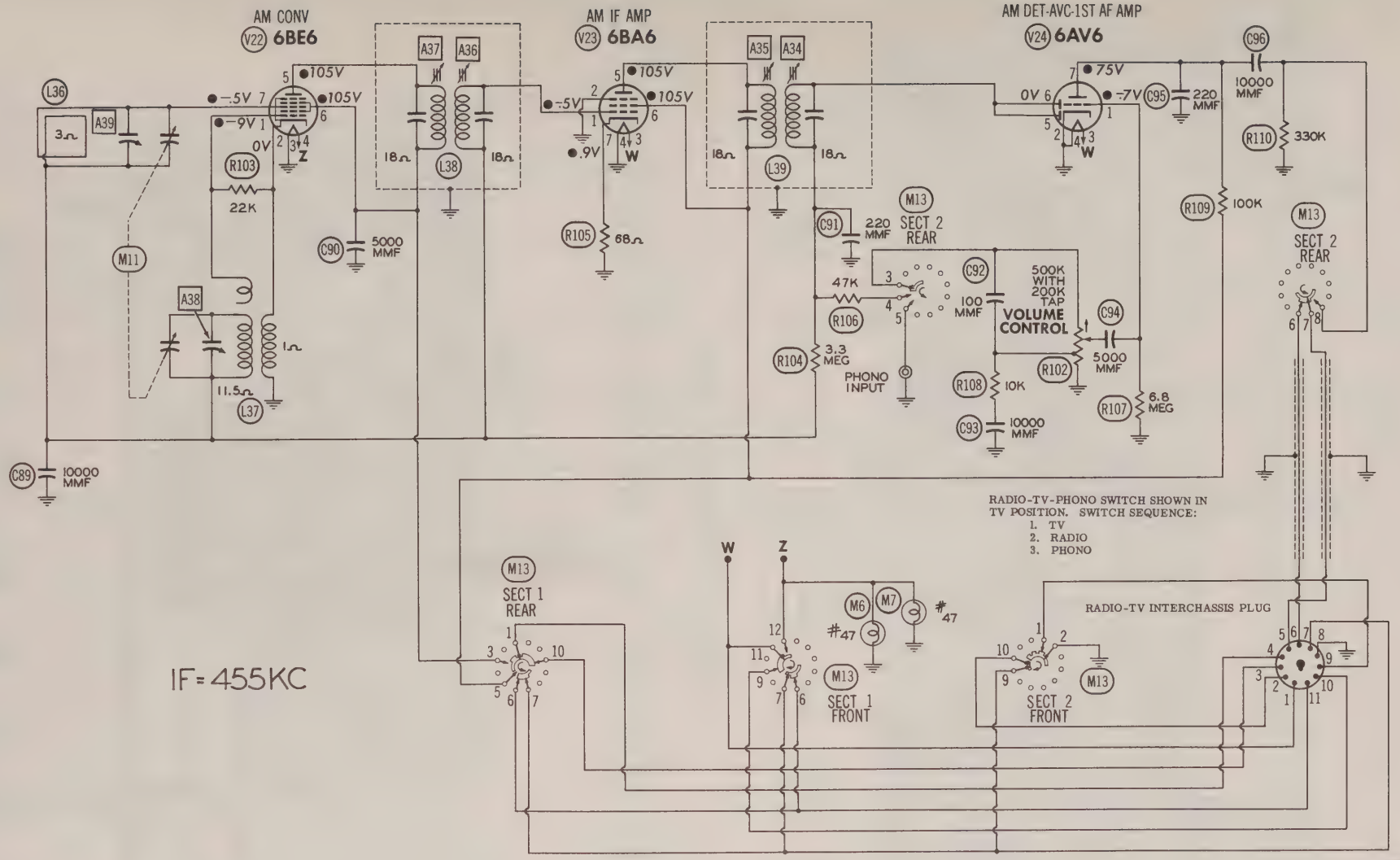
POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check by substitution V19 and V20. Check B+ filter and decoupling network.

SMALL AND/ON DIM PICTURE

Check by substitution V19 and V20. Check B+ filter and decoupling network.



AM RADIO CHASSIS V-2189-6 USED WITH CHASSIS
V-2318-31 - 35 - 41 - 45 AND V-2328-301 - 401

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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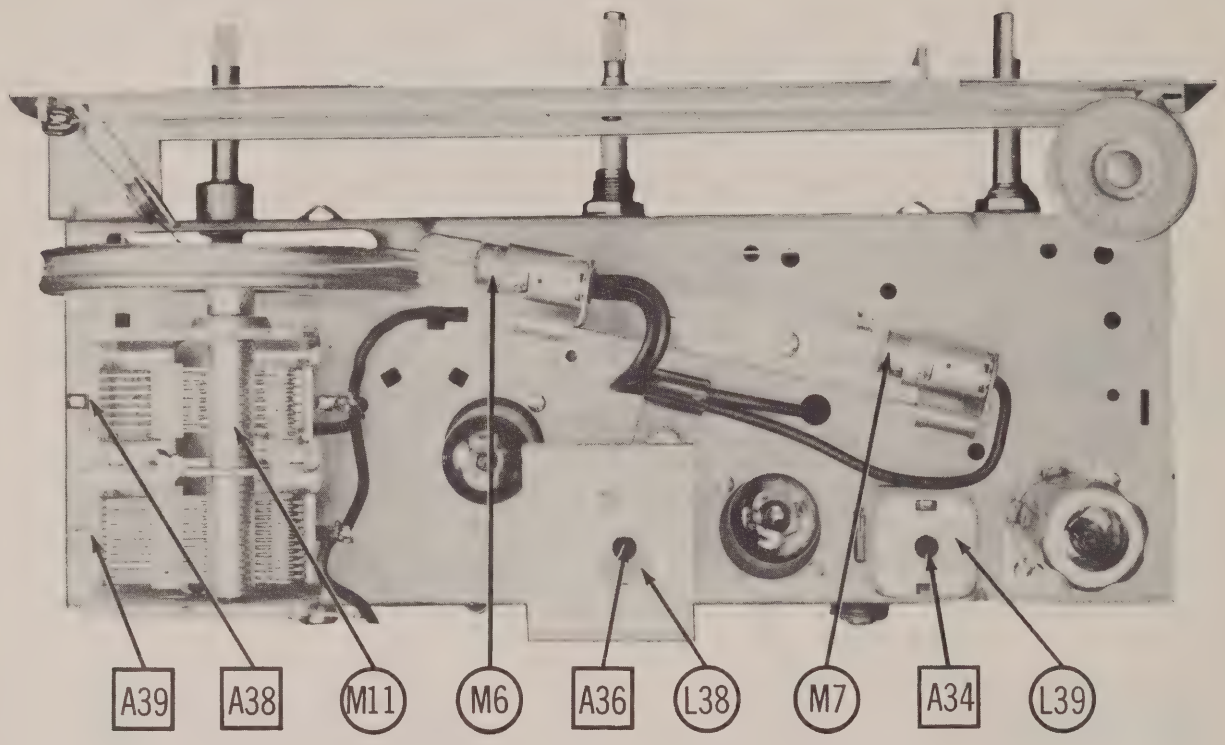
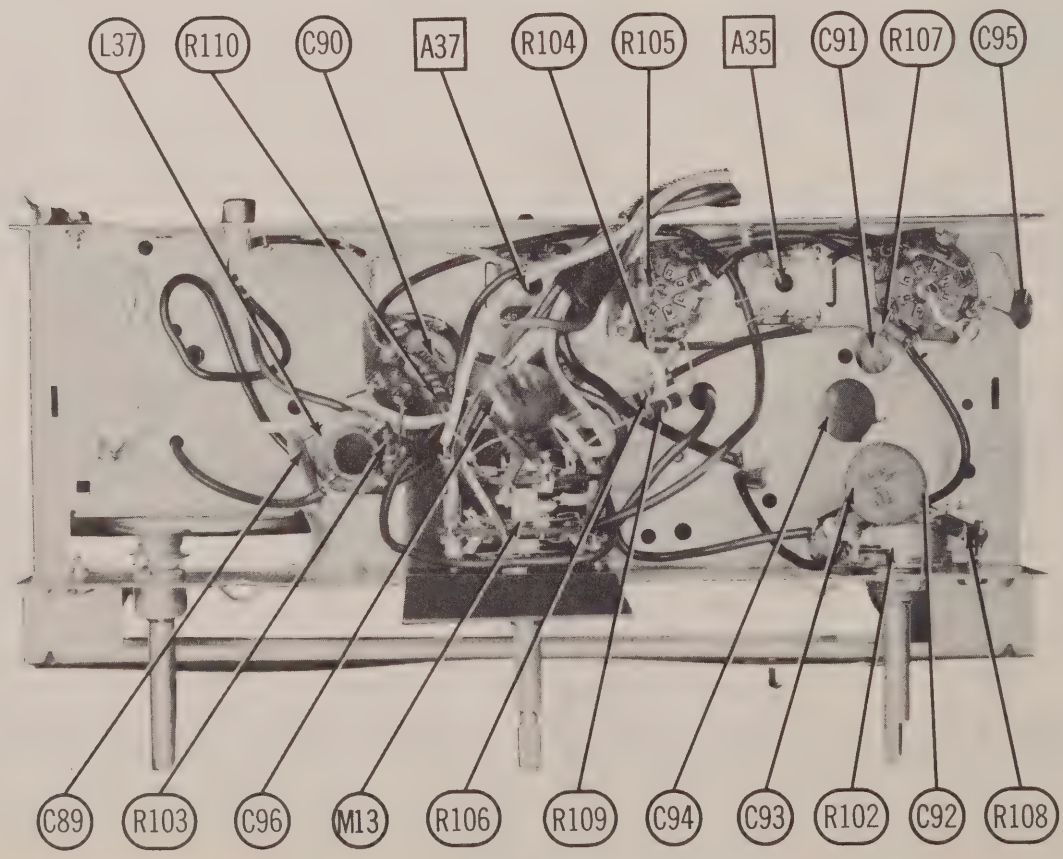
RADIO SCHEMATIC

WESTINGHOUSE MODELS H-853K24A, H-853KU24A, H-854K24A(S), (V), H-854KU24A, H-869K24A(S), (V), H-869KU24A, H-870K24A(S), (V), H-870KU24A, H-875T24(S), (V), H-875TU24B, H-876T24B(S), (V), H-876TU24B, H-877T24B(S), (V), H-877TU24B, H-881K24A(S), (V), H-881KU24A, H-888C24(S), (V), H-888CU24, H-889C24(S), (V), H-889CU24 (Ch. V-2318, V-2328 & Radio Ch. V-2189-6)

PROPERTY OF
J. E. [illegible]
3824 MAJOR ST.
DENVER, COLORADO



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW

TV PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

PROPERTY OF
D. F. BLANKENSHIP
3924 MEADE
DENVER

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	6BZ7 used as an alternate
V2	Mixer-Osc.	6AT8	6AT8	9DW	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	Keyed AGC	6AU6	6AU6	7BK	
V8	Sound IF-Sync Amp.				
	Sound IF Amp.	6AN8	6AN8	9DA	
V9	Audio Detector	6BN6	6BN6	7DF	
V10	Audio Output	6BK5	6BK5	9BQ	
V11	Sync Separator	6CS6	6CS6	7CH	
V12	Vert. Mult.	12AU7	12AU7	9A	
V13	Vert. Output	12B4A	12B4A	9AG	12B4 used as an alternate
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	12AU7	12AU7	9A	
V16	Horiz. Output	6CD6G	6CD6G	5BT	
V17	Damper	6AU4GT	6AU4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Westinghouse PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V21	24DP4A ①	24DP4A ①	24DP4A ①	24DP4A ② 24DP4	24DP4A ① 24DP4	12L 12L	① Aluminized ② Silver screen

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: PYRAMID PART No.	REPLACEMENT DATA: SANGAMO PART No.	NOTES
C1A	▲40	450	V-9891-1	FP428.4	TM-4030	Q-325	
B	■40	450					
C	30	350					
D	▲30	350					
C2A	30	50	V-11535-1	FP366.5	TM-4115	T-815	
B	▬30	500		TC47		MT-15150	
C	▲150	50					
D	■10	450					
C3	30	450	V-6570	TC77	TD-30-450	FM-4530	Note 1

Note 1. Some versions use 10MFD in this application (part #V-10293-1).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	NOTES
C4	4.3						
C5	4.3						
C6	5.1						
C7	1.6						
C8	1000			DD-102	801-001	DC-521	
C9	1			TCZ-1	NP0A-010		
C10	1000			MFT-1000			
C11	1000						
C12	1000			MFT-1000			
C13	47			D6-470	GP1K-470	UC-5447	
C14	2			TCZ-2R2	NP0A-2R2		
C15	1.5				N330A-1R5		
C16	10			TCZ-10	NP0K-100	ZT-541	
C17	1000			DD-102	801-001	DC-521	
C18	680			D6-681	GP2K-681	UC-5368	
C19	1000			DD-102	801-001	DC-521	
C20	82						
C21	1000			DD-102	801-001	DC-521	
C22	1000			MFT-1000			
C23	1000			MFT-1000			
C24	.05	400	RCP10W4503M	DF-503		PT415	
C25	.02	600	RCP10M6203M	DF-203	817-02	PT612	
C26	.25	400	RCP10W4254M			PT4025	
C27	2.2		V-8963-2296	TCZ-2R2	NP0A-2R2		
C28	68		R1CC20S2L680K	D6-680	GP1K-680	UC-5468	
C29	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C30	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C31	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C32	2.2		V-8963-2298	TCZ-2R2	NP0A-2R2		
C33	47		R1CC20S2L470K	D6-470	GP1K-470	UC-5447	
C34	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C35	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C36	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C37	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C38	800		R2CC61Z5Z801P	DD-801	831-801	DC-521	
C39	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525	
C40	56		R1CC62R2G560K				
C41	.1	400	RCP10M4104M	DF-104		PT401	
C42	.1	400	RCP10W4104M	DF-104		PT401	
C43	.5	400	RCP10W4504M			PT405	
C44	10		R1CC61R2G2100K				
C45	47		R1CC61R2G2470K				
C46	56		R1CC62R2G560K				
C47	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525	
C48	47		R1CC61R2G2470K				
C49	4.7		V-8963-4796	TCZ-4R7	NP0A-4R7	ZT-555	
C50A	5000		V-9044-1	DD2-502	811-005	DC-525	
B	5000				811-005	DC-525	
C51	1500		R2CC62Y5Y152M	DD-152	801-0015	DC-5215	
C52	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525	

CAPACITORS (cont)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA Westinghouse PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	NOTES
C53	.02	600	RCP10M6S3D8	DF-503	81T-03	PT6I1	
C54	.01	600	RCP10M6103M	D6-103	GP3-333-103	PT6I1	
C55	.01	600	RCP10M6103M	D6-103	GP3-333-103	PT6I1	Note 2
C56	5000		RCC52Y5250P	DD-502	81L-006	DC-525	
C57	.01	600	RCP10M6103M	D6-103	GP3-333-103	PT6I1	
C58	.5	400	RCP10W4S0M			PT40I5	
C59	5000		RCC52Y5250P	DD-502	81L-006	DC-525	
C60A	10000				81L-01	DC-51I	
B	2000				81L-002	DC-522	
C	5000		◆V-1I92-1	◆PC-101	81L-005	DC-526	
D	5000				81L-005	DC-526	
C61	.01	600	RCP10M6103K	D6-103	GP3-333-103	PT6I1	
C62	.05	400	RCP10W4S03M	DF-503		PT4I5	
C63	.15	400	RCP10W4154K			PT40I5	
C64	.1	400	RCP10M4I04M	DF-104		PT40I	
C65	.1	600	RCP10M6I04M	DF-104		PT60I	
C66	82		RICC62R2826K				
C67	68	500	RICC62R2G80K	D6-680	GP3K-680	UC-5468	
C68	390	500	RCM20B39IK	D6-391	81-391	MC2343	
C69	680	500	RCM20B68IK	D6-681	GP3K-681	UC-5388	
C70	.01	600	RCP10M6I03M	D6-103	GP2-333-103	PT6I1	
C71	.005	600	RCP10M6S0M	D6-502	GP3-333-502	PT6I5	
C72	.01	600	RCP10M6I03M	D6-103	GP3-333-103	PT6I1	
C73	.1	400	RCP10W4I04M	DF-104		PT40I	
C74	3900	500	RCM30C392K			MC2463	
C75	82	500		D6-820	81I-82G		
C76	390	500	RCM30B39IK	D6-391	81I-39I	MC2343	
C77	.01	600	RCP10M6I03M	D6-103	GP3-333-103	PT6I1	
C78	.1	400	RCP10M4I04M	DF-104		PT40I	
C79	.05	400	RCP10M4S03M	DF-503		PT4I5	
C80	.05	600	RCP10M6S03M	DF-503		PT6I5	
C81	10000		RICC63Y5710M	DD-103	81J-01	DC-51I	
C82	.25	400	RCP10M4Z54M			PT4025	
C83	33	3000	V-10710-35				Note 3
C84	65	3000	V-10710-9				Note 3
C85	55	3000	V-10710-9				Note 3
C86	.01	600	RCP10M6I03M	D6-103	GP2-333-103	PT6I1	
C87	.01	1400	V-10710-13	DD-103		PT16I1	
C88	.01	1400	V-10710-13	DD-103		PT16I1	Note 4

Note 2. Not used in some versions.
Note 3. Used in early production chassis only.
Note 4. Used in chassis V-2318-31, -32, -41, -42, V-2328-301 and -401 only.
◆ Items C60A, C60B, C60C, C60D, R67A, R67B, R67C and R67D are combined in one unit.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	V-9877-10	GJ-614	RTV-317	F1-7	U1512R	Picture (Panel)
B	500KΩ	½				R3-47	UR55-T54 †	Volume (Taps at 400Ω) (Rear)
C	Switch					KB-1	UR-36	Attach to R1B.
R2A	650Ω	½	V-9903-9	QJ3-113	A47-500K-Z	A6-60	U-51	Tone (See Note 1)
B	Shaft	½	Not Req.	Not Req.	KBS-3	AK-4	Not Req.	Attach to R3A.
R3A	650Ω	½	V-11539-3	QJ1-125	A47-75K-Z	AB-35	U-28	Horizontal Hold
B	Shaft	½	Not Req.	Not Req.	KBS-3	AK-4	Not Req.	Attach to R3A.
R4A	750KΩ	½	V-11539-2	QJ1-136	A47-750K-S	AB-56	U-54	Vertical Hold
B	Shaft	½	Not Req.	Not Req.	KBS-3	AK-4	Not Req.	Attach to R4A.
R5A	100KΩ	½	V-11536-2	QJ1-138	A47-100K-S	AB-40	U-41	Brightness (See Note 2).
B	Shaft	½	Not Req.	Not Req.	KBS-3	AK-4	Not Req.	Attach to R5A.
R6	500Ω	2	V11545-3		3B-500			Quieting (Wire Wound)
R7A	1500Ω	2	V-14782-1	WK-1500	A43-1500	VK-130	R1500L	Vertical Linearity
B	Shaft	½	Not Req.	Not Req.	KBS-1/4	Not Req.	Not Req.	Attach to R7A.
R8A	750KΩ	½	V-12709-10	QJ1-126	A47-750K-S	AB-56	TA3EL	AGC
B	Shaft	½	Not Req.	Not Req.	KBS-1/4	AK-1	Not Req.	Attach to R8A.
R9A	250KΩ	½	V-12709-3	QJ1-130	A47-250K-S	AB-50	U-46	Height
B	Shaft	½	Not Req.	Not Req.	KBS-1/4	AK-1	Not Req.	Attach to R9A.
R10A	5Meg	½	V-12709-11	QJ1-141	A47-5Meg-S	AB-87	TA5EL	Sync
B	Shaft	½	Not Req.	Not Req.	KBS-1/4	AK-1	Not Req.	Attach to R10A.
R11A	2Meg	½	V-9894-2	QJ1-139	A47-2Meg-S	BX-75	SU-58	Focus
B	Shaft	½	Not Req.	Not Req.	KBS-3	Not Req.	Not Req.	Attach to R11A.
R12A	2Meg	½	V-12709-3	QJ1-139	A47-2Meg-S	BX-75	TA3EL	Focus (See Note 2).
B	Shaft		Not Req.	Not Req.	KBS-1/4	Not Req.	Not Req.	Attach to R12A.

Note 1. Not used in some versions.
Note 2. Used as an alternate in some versions.
◆CONCENTRIKIT EQUIVALENT, K-2 KIT, BASE ELEMENTS AND SHAFTS, B1T-109, P1-123 (Panel)
B1H-1532, R3-212 (Rear)
76-1, Switch

†Universal Replacement (Mallory exact duplicate Part No. UE1745).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R12	15KΩ	½			
R13	1Meg	½			
R14	750KΩ	½			
R15	220KΩ	½			
R16	820Ω	½			
R17	470Ω	½			
R18	1000Ω	½			
R19	15KΩ	½			
R20	18Meg 5%	½	RC20AE186J	BTS-18Meg5%	
R21	1.5Meg 5%	½	RC20AE155J	BTS-1.5Meg5%	
R22	390KΩ	½	RC20AE394K	BTS-390K	
R23	5600Ω	½	V-9927-22		Note 1
R24	470Ω	½	RC20AE471M	BTS-470	Note 2
R25	68Ω	½	RC20AE680K	BTS-68	
R26	100KΩ 5%	½	RC20AE104J	BTS-100K 5%	
R27	10KΩ	½	RC20AE103M		
R28	4700Ω 5%	½	V-9927-2		
R29	68Ω	½	RC20AE680K	BTS-68	
R30	4700Ω 5%	½	V-9927-2		
R31	470Ω	½	RC20AE471M	BTS-470	
R32	470Ω	½	RC20AE471M	BTS-470	
R33	150Ω	½	RC20AE151K	BTS-150	
R34	220Ω	½	RC20AE221K	BTS-220	
R35	3300Ω	½	RC20AE332K		
R36	100	½	RC20AE100M	BTS-10	
R37	22KΩ	½	RC20AE223K		
R38	3300Ω	5	V-5924-3		
R39	100KΩ	½			
R40	1.5Meg	½	RC20AE155K		
R41	330KΩ	½	RC20AE334K		
R42	330KΩ	½	RC20AE334K		
R43	22KΩ	½	RC20AE223K		
R44	100KΩ	½	RC20AE104K		
R45	22KΩ 5%	1	RC20AE223J		
R46	27KΩ	½			
R47	15KΩ	½	RC20AE153K		
R48	100KΩ	½	RC20AE104K		
R49	68KΩ	1	RC20AE683K	BTA-68K	
R50	27KΩ	2	RC40AE273K	BTB-27K	
R51	560Ω	2	RC40AE561K	BTB-560	
R52	470Ω	2	RC20AE471M	BTS-470	
R53	330KΩ	½	RC20AE334K	BTS-330K	
R54	12KΩ	½	RC20AE123K	BTS-12K	
R55	10KΩ	½	RC20AE103M	BTS-10K	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R56	100Ω	½	RC20AE102K	BTS-100	
R57	150Ω	½	RC20AE151K	BTS-150	
R58	100KΩ	½	RC20AE523K		
R59	270KΩ	½	RC20AE274K		
R60	1Meg	½	RC20AE105K		
R61	680Ω	½	RC20AE682K		
R62	10KΩ	½	RC40AE103K		
R63	10KΩ	½	RC20AE103K	BTS-10K	
R64	150KΩ	½	RC20AE154K		
R65	68KΩ	½	RC20AE683K		
R66	12KΩ	½	RC20AE123K		
R67A	22KΩ	9	◆V-1192-1		
B	22KΩ	9			
C	330Ω	9			
D	2200Ω	9			
R68	680KΩ	½	RC20AE684K		
R69	100KΩ	1	RC30AE104K		
R70	68KΩ	1	RC20AE683K		
R71	180KΩ	½	RC20AE183K		
R72	220KΩ	½	RC20AE223K		
R73	2.2Meg	2	RC20AE225K		
R74	470Ω	2	RC40AE471K		
R75	560Ω	½	RC20AE561K		
R76	560Ω	½	RC20AE561K		
R77	560Ω	2	RC40AE561K		
R78	1Meg	½	RC20AE105K		
R79	1Meg	½	RC20AE105K		
R80	27KΩ	½	RC20AE273K		
R81	220KΩ	½	RC20AE224K		
R82	470KΩ	½	RC20AE474K		
R83	47KΩ	½	RC20AE473K		
R84	56KΩ	1	RC30AE563K		
R85	100Ω	½	RC20AE102K		
R86	270KΩ 5%	½	RC20AE274J		
R87	56KΩ	½	RC20AE563K		
R88	5600Ω	½	RC20AE562K		
R89	820Ω	½	RC20AE821K		
R90	150Ω	2	RC40AE151M	BTS-150	
R91	470KΩ	½	RC20AE474K		
R92	22KΩ	2	RC40AE223K		
R93	27KΩ	2	RC40AE273K		
R94	150Ω	2	RC40AE151M		
R95	100KΩ	1	V-9927-18		
R96	270KΩ	½	RC20AE274J	BTS-270K	
R97	820Ω	½	RC20AE822K	BTS-820	
R98	4700Ω	½			
R98A	600Ω	8	†V-10054-9	1 3/4A-600	Note 3
B	1400Ω	10		1 3/4A-1500	
R100	330Ω	10	V-2328-33	1 3/4A-400	
R101	100KΩ	1	V-9927-13	BTA-100K	

Note 1. Not used in some versions.
Note 2. A 24KΩ 1W resistor is used in some versions.
Note 3. Used in early production models only.
◆ Items C60A, C60B, C60C, C60D, R67A, R67B, R67C, R67D are combined in one unit.
† Items R98A, R98B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Westinghouse PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	508VCT	5VAC	V-12805-4C		P-2830 ②			26R33 ①	
	②2.03A	.280ADC	②6A							
	SEC. 3	SEC. 4	SEC. 5							
	12.6VCT									
	②4A									

① Use low taps on HV secondary. Series 6.3V windings for Sec. 5 parallel and phase 5V windings tape extra HV tap.
② Series 6.3V②4A windings for Sec. 3. Tape 6.3V ②1.25A for 2 windings.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	Westinghouse PART No.	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No.	Stancor PART No.	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	V-14627-1	FB419 & RF800 ③①		2357I & 2I4RI ④①	X094 ④①	A-8255 & WC-8 ③ A-8142C ③②	FLY-18 & DY-25 ③①	D50 & WC-11 ④①
T3	Vert. Output Trans.	V-14609-1	21900Z ③①	A-2823		Y302B ③①	26872 ③①	V-1082 ③①	
T4A	Yoke(90°) Horiz. (D.SM3H)	V-14663-2 ③	DF607 ③①	MDF-92 ③①			DY-18A ③①	V-16 ③①	V-41-1 ③①
B	Vert.(S4M3)	V-15271-4 ③							
T5	Horiz. Lin. Coil (S-9M1)	V-14691-1	RF600 ③②	MWC-6 ③	21RI1 ③	20IR15 ③	WC-8 ③	WC-18 ③	WC-12 ③ ⑮
T6	Width Coil	V-14602-2		MWC-6 ③	21RI1 ③	20IR5A ③ ⑪	WC-8 ③	WC-17 ③ ⑮	WC-13 ⑮

① Drill new mounting hole(s).
② Use 8 to 1 turns ratio.
③ Connect as auto transformer.
④ Includes resistors R75 and R76.
⑤ Alternate part number.
⑥ Use original yoke rear cover and centering device.
⑦ Use original horizontal damping network.
⑧ Drill new mounting hole or use original slider, bracket and core.
⑨ Connect to terminals #3 and #4.
⑩ Connect to coded red and blue terminals.
⑪ Do not use tap.
⑫ Connect to coded blue and green terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
Horiz. Out. Plate Lead	9		9	9	5	9	9
4	7		7	7	4	7	7
3	5		5	5	4	5	5
2	3		3	2	3	3	3
7	1		1	1	1	1	1
5	RF 800 Term #3		2I4RI Term "D"	2	7	WC-20 Term #1	WC-11 Orange Term
6	RF 800 Term #4		2I4RI Term "E"	6	8	WC-20 Term #2	WC-11 Black Term
Connect Width Coil Across	7 & 8		RF 800 2I4RI Term #1 & #2 Across 3 & 1	Term "A"&"B" Across 3 & 1	6 & 2	WC-8 2 & 1	WC-20 Term #3 & #4 Across 3 & 1	WC-11 Red & Blue Across 3 & 1
Special Notes **		⑬	⑬			⑬	⑬

⑬ If AGC does not function properly, reverse width coil primary or secondary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI	IMPEDANCE SEC	REPLACEMENT DATA Westinghouse PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T7	7KΩ	3Ω	V-14080-2	ZIII3 ①	A-2931 ①	A-3678 ①	26S48 ①	S-7X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V C IMP	REPLACEMENT DATA Westinghouse PART No.	QUAM PART No	NOTES
SP1	4"	PM	5 8Ω	V-15518-1 ①	4A07Z8Q	① Used in models H-898C24 (V), (S), H-899C24, (V), and (S).
SP2	8"	PM	8 5Ω	V-15530-1 ①	8A8	② Used in models H-876T24B, (V), (S), H-877T24B, (V) and (S).
	5 1/4"	PM	3 to 4Ω	V-14782-1 ②	5J4A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Westinghouse PART No.	MEISSNER PART No.	HEATH PART No.	MILLER PART No.	NOTES
L1	Ant. Trans.	.4CT	0Ω	V-8821-3				
L2	Ant. Coil	0Ω						Channel 6
L3	Ant. Coils	0Ω						
L4	Ant. Coil	0Ω						Channel 13
L5	Ant. Coil	0Ω						Channel 13
L6	Neut. Coil	0Ω						
L7	RF Coil	0Ω						Channel 13
L8	RF Coils	0Ω						
L9	RF Coil	0Ω						Channel 6
L10	RF Shunt Coils	0Ω						
L11	Osc. Coil	0Ω						Channel 13
L12	Osc. Coils	0Ω						
L13	Osc. Coil	0Ω						Channel 6
L14	Conv. Plate	.1Ω						
L15	1st Video IF	.1Ω		V-9883-8	17-4634*	TV-131	6310*	
L16	47.25MC Trap	0Ω		V-11973-1	30-1047		6235	
L17	P.L. Choke	0Ω		V-4885-3	19-1000	TV-129	4603	L.1 Microseries
L18	2nd Video IF	.4Ω	.3Ω	V-9879-4	17-5001	TV-125	6231	
L19	41.25MC Trap	0Ω		V-11973-1		TV-131	6236	
L20	3rd Video IF	.4Ω	.3Ω	V-9879-4	17-5001	TV-125	6231	
L21	Fil. Choke	0Ω		V-4885-3	19-1000	TV-129	4603	L.1 Microseries
L22	Series Peaking Coil	3Ω		V-15480-3	19-3125		6153	116 Microseries
L23	4.5MC Trap	L.4Ω		V-15490-1	20-1004	TV-131	1469	
L24	Series Peaking Coil	7.5Ω		V-15480-4	19-3180	TV-134	6180	170 Microseries
L25	Shunt Peaking Coil	7.5Ω		V-15480-5	19-3200		6156	220 Microseries
L26	Series Peaking Coil	L.3Ω		V-4885-1	19-1005		4634	14 Microseries
L27	Fil. Choke	0Ω		V-4885-3	19-1000	TV-129	4603	L.1 Microseries
L28	1st Sound IF	L.5Ω		V-15490-1	20-1004	TV-131	1469	
L29	2nd Sound IF	L.5Ω		V-15490-1	20-1004	TV-131	1469	
L30	RF Choke	8Ω		V-15480-5	19-4400	TV-120	6134	250 Microseries
L31	Fil. Choke	0Ω		V-4885-3	19-1000	TV-129	4603	L.1 Microseries
L32	Quadrature Coil	4.2Ω		V-11996-1	17-1031s		1681	
L33	Horiz. Osc.	95Ω		V-8784	19-1018	TV-123	6210	
L34	RF Choke	8Ω		V-9099-3	19-1003		4606	3.3 Microseries, IRC Part No. CLA

* Use one winding only.
■ Drill mounting holes.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L35	.280ADC	41Ω	1.15HY	V-15170-1	C5037 ①	C-2996 ①	C-2328 ①	26C44 ①	C-171 ①

① Drill one new mounting hole.

FUSES

ITEM 'No.	TYPE	RATING	REPLACEMENT DATA Westinghouse PART No. HOLDER	FUSE	LITTELFUSE PART No. HOLDER	FUSE	BUSS PART No. HOLDER	FUSE
M1	3AG	3/8A 250V	V-9171-10		312.375 (3AG 3/8A)	357001		AGC 3/8 4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA Westinghouse PART No.	SYLVANIA PART No.	NOTES
M4	CK706A		1N90 or 1N132	Video Det.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M5	Dial Light	#55	#55, TV
M6	Jewel Light	#47	#47, Chassis V-2318-31, -32, -41, -42, V-2328-301, -401
M9	Tuner	V-15460-1	VHF - Chassis V-2318. Used in models with letter (V) after model designation
	Tuner	V-14170-2	VHF - Chassis V-2318. Used in models with letter (S) after model designation
M10	Tuner	V-14150-1	VHF-UHF combination- Chassis V-2328 (Combination tuner composed of individual VHF & UHF tuner units. VHF tuner (part #V-14980-2) & UHF tuner (part #V-14990-2).
M12	Video Det. Assy.	V-12128-2	Includes M4, coils and capacitors
M13	Switch	V-15438-1	Selector (Rotary-wafer type) Chassis V-2318-31, -32, -41, -42, V-2328-301, -401
M14	Centering Device		Part of deflection yoke rear cover (T4)

WESTINGHOUSE MODELS H-853K24A(S), (V), H-853N24A, H-854K24A(S), (V), H-854N24A, H-866K24A(S), (V), H-866N24A, H-870K24A(S), (V), H-870N24A, H-871T24A(S), (V), H-871U24A, H-872T24A(S), (V), H-872U24A, H-876T24B, H-877T24B, H-881K24A, H-881N24A, H-888C24(S), (V), H-888C024, H-889C24(S), (V), H-889C024, H-896K24A(S), (V), H-896N24A, H-897K24A(S), (V), H-897N24A, H-898C24(S), (V), H-898C024, H-899C24, H-899C024 (Ch. V-2318, V-2328 & Radio Ch. V-2189-6).

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS (cont)

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M15	Ion Trap	V-9784-5	
	Trimmer Cap.	V-11228-2	Horiz. Mult. Trimmer (5-80MMF)
	Cabinet	2V-1401-10	Models H-888C24V, S, H-888CU24
	Cabinet	V-1401-11	Models H-889C24V, S, H-889CU24
	Knob	V-14229-4	VHF channel selector - Models H-853K24A(V), (S), H-854K24A(V), (S), H-869K24A(V), (S), H-870K24A(V), (S), H-776T24B(V), (S), H-877T24B(V), (S), H-881K24A(V), (S),
	Knob	V-14229-1	VHF channel selector - Models H-875T24B(V), (S),
	Knob	V-14229-6	VHF channel selector - Models H-888C24(V), (S), H-889C24 (V), (S)
	Knob	V-14520-3	VHF channel selector - Models H-853KU24A, H-854KU24A, H-877TU24B, H-881KU24A
	Knob	V-14520-1	VHF channel selector - Models H-869KU24A, H-870KU24A, H-875TU24B
	Knob	V-14520-5	VHF channel selector - Models H-888CU24, H-889CU24
	Knob	V-14423-1	VHF fine tuning - Models H-869K24A (V), (S), H-870K24A(V), (S), H-876TU24B, H-877TU24B, H-888CU24, H-889CU24
	Knob	V-14423-2	VHF fine tuning - Model H-875TU24B
	Knob	V-14423-1	VHF fine tuning - Models H-888CU24, H-889cU24
	Knob	V-14219-1	UHF dial - Models H-875TU24B, H-888CU24, H-889CU24
	Knob	V-12913-8	On-off-volume - All models
	Knob	V-12914-1	Picture - Models H-888C24(V), (S), H-889C24(V), (S), H-888CU24, H-889CU24
	Knob	V-10009-21	Selector - Models H-888C24(V), (S), H-888CU24
	Knob	V-10009-22	Selector - Models H-889C24(V), (S), H-889CU24
	Safety Glass	V-15476-1	Models H-853K24A(V), (S), H-854K24A(V), (S), H-853KU24A, H-854KU24A, H-869K24A(V), (S), H-870K24A(V), (S), H-876T24B(V), (S), H-877T24B(V), (S), H-876TU24B, H-877TU24B, H-888C24(V), (S), H-889C24(V), (S), H-888CU24, H-889CU24, H-881K24A(V)(S), H-869KU24A, H-870KU24A, H-881KU24A
	Safety Glass	V-14507-6	Models H-875T24B (V), (S), H-875TU24B
	Mask	V-12989-4	Models H-853K24A (V), (S), H-854K24A(V), (S), H-853KU24A, H-854KU24A, H-869K24A(V), (S), H-870K24A(V), (S), H-869KU24A, H-870KU24A, H-876T24B(V), (S), H-877T24B (V), (S), H-876TU24B, H-877TU24B, H-881K24A(V), (S), H-881KU24A, H-888C24(V), (S), H-889C24(V), (S), H-888CU24, H-889CU24
	Mask	V-12989-3	Models H-875T24B(V), (S), H-875TU24B
	Jewel	V-14773-3	Pilot Light - Models H-888C24(V), (V), H-889C24(V), (S), H-888CU24, H-889CU24

RADIO PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V22	AM Converter	6BE6	6BE6	7CH	
V23	AM IF Amp.	6BA6	6BA6	7BK	
V24	AM Det.-AVC-1st AF Amp.	6AV6	6AV6	7BT	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	Westinghouse PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	
C89	10000		R2CC63Z5Z103P	DD-103	811-01	DC-511	
C90	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525	
C91	220		R1CC62S3N221M	DD-221	811-221	UC-5322	
C92	100		R1CC61S3N101M	DD-101	801-101	UC-531	
C93	10000		V-9863-3	DD-103	811-01	DC-511	
C94	5000		R2CC62Z5Z502P	DD-502	811-005	DC-525	
C95	220		R1CC62S3N221M	DD-221	811-221	UC-5322	
C96	10000		V-9863-3	DD-103	811-01	DC-511	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R102A	500KΩ	½	V-9993Y-18	Q19-133X	A47F2-500K	ABT-65	UT431	Volume Control (Tap at 200KΩ)
B	Shaft		Not Req.	Not Req.	FS-3	AK-3	Not Req.	Attach to R102A.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R103	22KΩ	½		BTS-22K	
R104	3.3Meg	½		BTS-3.3Meg	
R105	68Ω	½		BTS-68	
R106	47KΩ	½		BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R107	6.8Meg	½		BTS-6.8Meg	
R108	10KΩ	½		BTS-10K	
R109	100KΩ	½		BTS-100K	
R110	330KΩ	½		BTS-330K	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L36	Loop Ant.	8Ω		V-15533-1				
L37	Osc. Coil	1Ω	11.5Ω	V-14408-2	14-1073▲		69-Osc.●	
L38	Input IF	18Ω	18Ω	V-10945-1	16-6758	BC-352	12-C1	
L39	Output IF	18Ω	18Ω	V-10945-1	16-6758	BC-353	12-C2	

▲ Lends sufficient mounting support.
● Drill mounting hole.

PROPERTY OF
L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Westinghouse PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		ACD-J	A-1 and A-3	46-T	O-1 or S-1 and O-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	Westinghouse PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M3	78RPM Needle	*JP-30 or †JPS-30 or ♦JPS-30D	*C-320 or †C-318 or ♦C-318D	*W-30A or †W-30S or ♦W-30D	* Metal † Jewel ♦ Diamond
M3	33 1/3-45RPM Needle	*JP-30LP †JPS-30LP or ♦JPS-30LPD	*A-322 or †A-300 or ♦A-300D	*W-30MGA or †W-30MGS or ♦W-30MGD	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M6	Dial Light	#47	#47, Radio - Chassis V-2318-31, -32, -41, -42, V-2328-301, -401
M7	Dial Light	#47	#47, Radio - Chassis V-2318-31, -32, -41, -42, V-2328-301, -401
M11	Tuning Cap.	V-14184-2	2 Gang (20-355MMF, 15-105MMF) Radio - Chassis V-2318-31, -32, -41, -42, V-2328-301, -401
	Knob	V-10408-16	Radio tuning & volume - Models H-888C24(V), (S), H-888CU24
	Knob	V-10408-1	Radio tuning & volume - Models H-889C24(V), (S), H-889CU24
	Dial	V-1549-1	Radio - Models H-888C24(V), (S), H-889C24(V), (S), H-888CU24, H-889CU24
	Dial Pointer	V-14591-1	Radio - Models H-888C24(V), (S), H-889C24(V), (S), H-888CU24, H-889CU24

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL

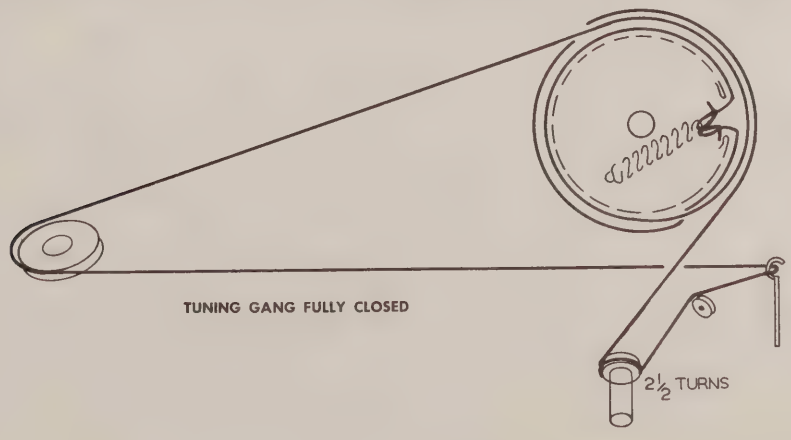
1. Remove 4 push-on type control knobs from front panel of cabinet.
2. Disconnect built-in antenna and AC phono plug.
3. Remove 9 wood screws. Remove rear cover.
4. Disconnect speaker leads, radio chassis power cable and pilot light.
5. Remove ground strap and 3 cable clamps from under side of chassis mounting board.
6. Pull radio-phono drawer out and lift up to disengage from track, then remove.
7. Remove 7 chassis bolts. Remove chassis.

RADIO CHASSIS REMOVAL

1. Remove 9 wood screws. Remove rear cover.
2. Disconnect ground lead from TV chassis, AC phono plug and 2 speaker leads.
3. Remove radio-phono drawer by pulling out and lift up to disengage from track, then remove.
4. Remove 3 push-on type control knobs.
5. Secure record changer and stand drawer on end . Unplug phono plug.
6. Remove 3 radio chassis bolts. Remove radio chassis.

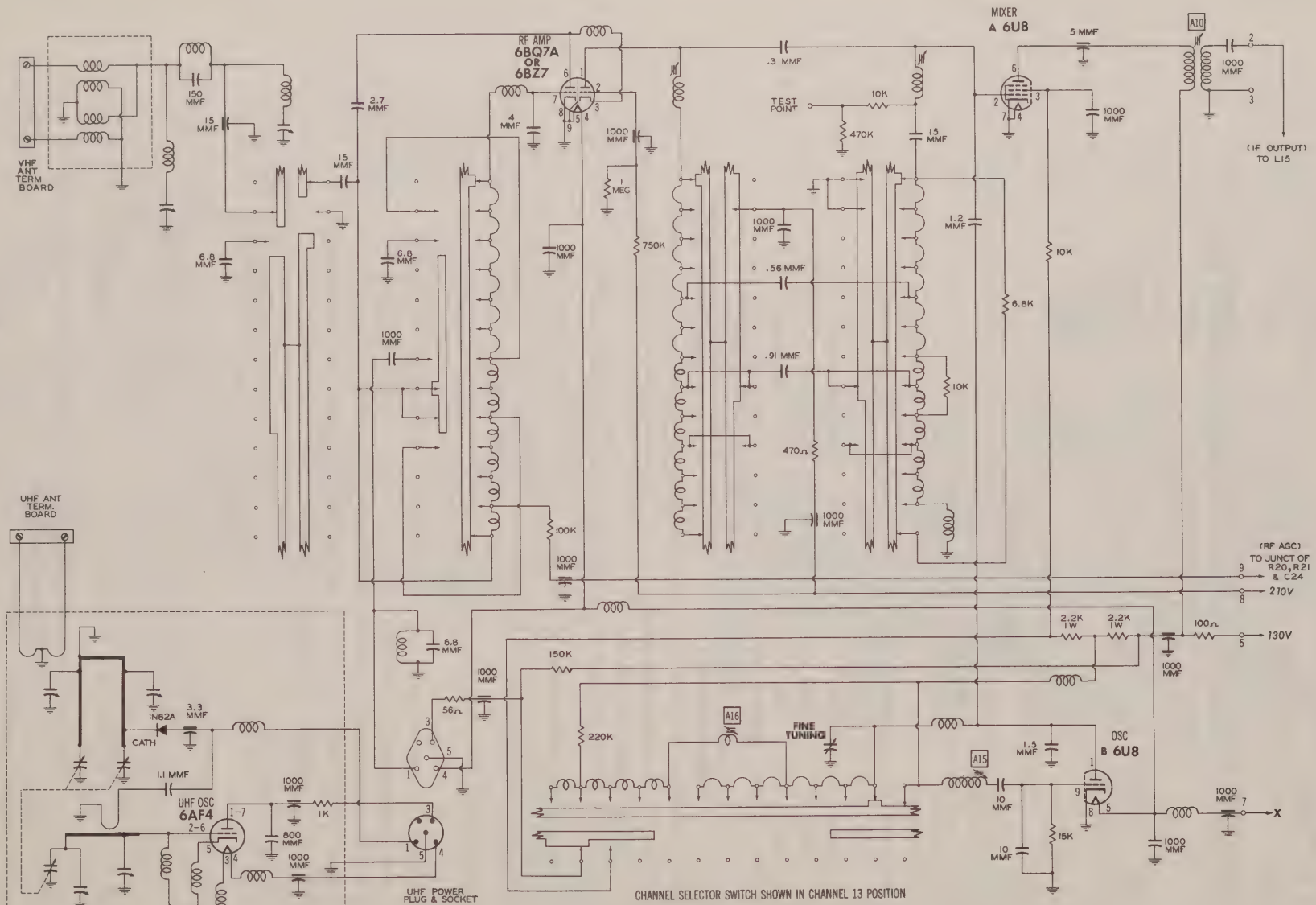
SPEAKER REMOVAL

1. Pull radio-phono drawer out. Remove 4 wood screws.holding small speaker access panel.
2. Remove panel and remove 2 hex nuts holding small speaker.
3. Remove 2 access plugs. Remove 2 top hex nuts from large speaker.
4. Remove 2 hex nuts from the bottom of large speaker. Pull small speaker into drawer and turn around, drop large speaker out bottom and slide small speaker into large speaker compartment and also, drop out the bottom.



RADIO DRIVE CORD STRINGING

WESTINGHOUSE MODELS H-853K24A(S), (V), H-853KU24A, H-854K24A(S), (V), H-854KU24A, H-869K24A(S), (V), H-869KU24A, H-870K24A(S), (V), H-870KU24A, H-875T24(S), (V), H-875TU24B, H-876T24B(S), (V), H-876TU24B, H-877T24B(S), (V), H-877TU24B, H-881K24A(S), (V), H-881KU24A, H-888C24(S), (V), H-888CU24, H-889C24(S), (V), H-889CU24 (Ch. V-2318. V-2328 & Radio Ch. V-2189-6)



UHF - VHF TUNER PART NO. V-14130-1 USED WITH CHASSIS V2328-101, 201, 301, 401.

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UHF-VHF TUNER SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP
3921 MEADE ST
DENVER, COLORADO

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V15, V16, V17 and V18. Check fuse, M1. Check waveform W16.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, T6, C79, C80, C81, C82, C78, R92, R93 and other associated components.	Check L33, C74, C77, R84, R85, R87, R86, and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V19 and V20. Check adjustments B3 and B4. Check R92, R93, C76, C77, T2 and other associated components.

BLOOMING

Check by substitution V16, V17, V18, V19 and V20. Check R92, R93, R95, C77 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video."

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or no Sound."

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set."

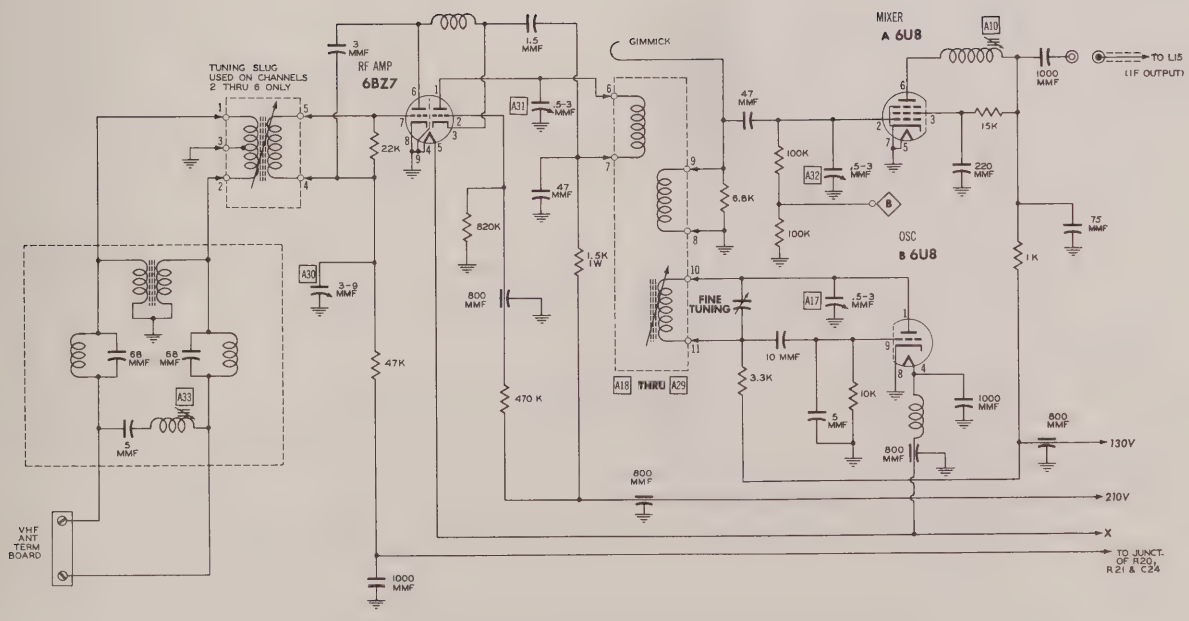
KEYSTONE EFFECT

Check T4 and its associated oomponents.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



VHF TUNER PART NO. V-14170-2 USED WITH CHASSIS V-2318-15,-25,-35,-45.

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ALTERNATE UHF TUNER SCHEMATIC

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removing the Channel Selector and Fine Tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

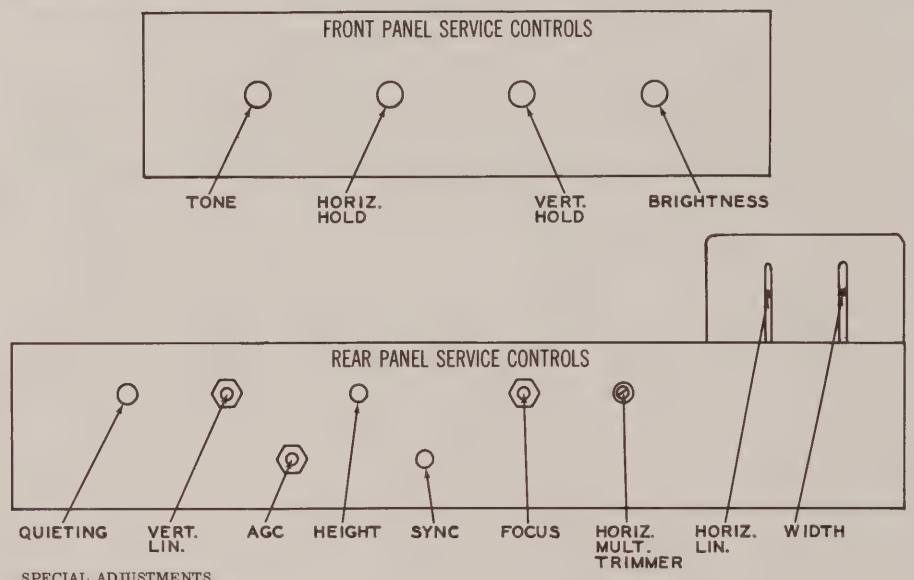
To clean safety glass, the following procedure should be used:

1. Remove the 4 push-on type control knobs from front panel of cabinet.
2. Open control door and remove 2 wood screws. Remove escutcheon assembly.
3. Remove 4 wood screws holding cabinet trim (left and right wings). Remove trims from cabinet front.
4. Remove 4 wood screws holding safety glass mounting brackets. (Note: Hold glass in place when removing brackets).
5. Remove safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS

AGC CONTROL ADJUSTMENT

The AGC Control (R8) is located on the rear apron of the chassis and can be adjusted without removing the chassis. With the receiver warmed up, tune to the strongest TV signal available. Rotate the AGC control clockwise until the receiver begins to overload with unstable sync. Rotate control counter clockwise until best picture and stable sync is obtained. On weak signals adjust for minimum snow in picture.

SYNC CONTROL ADJUSTMENT

The sync control (R10) is located on rear apron of the chassis and can be adjusted without removing the chassis. Tune in a TV station and adjust vertical and horizontal controls for normal picture. Rotate R10 counterclockwise until maximum stable sync is obtained. Rotate channel selector to all available stations in that area. Check for stable sync on all channels, if necessary, slightly retouch R10.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

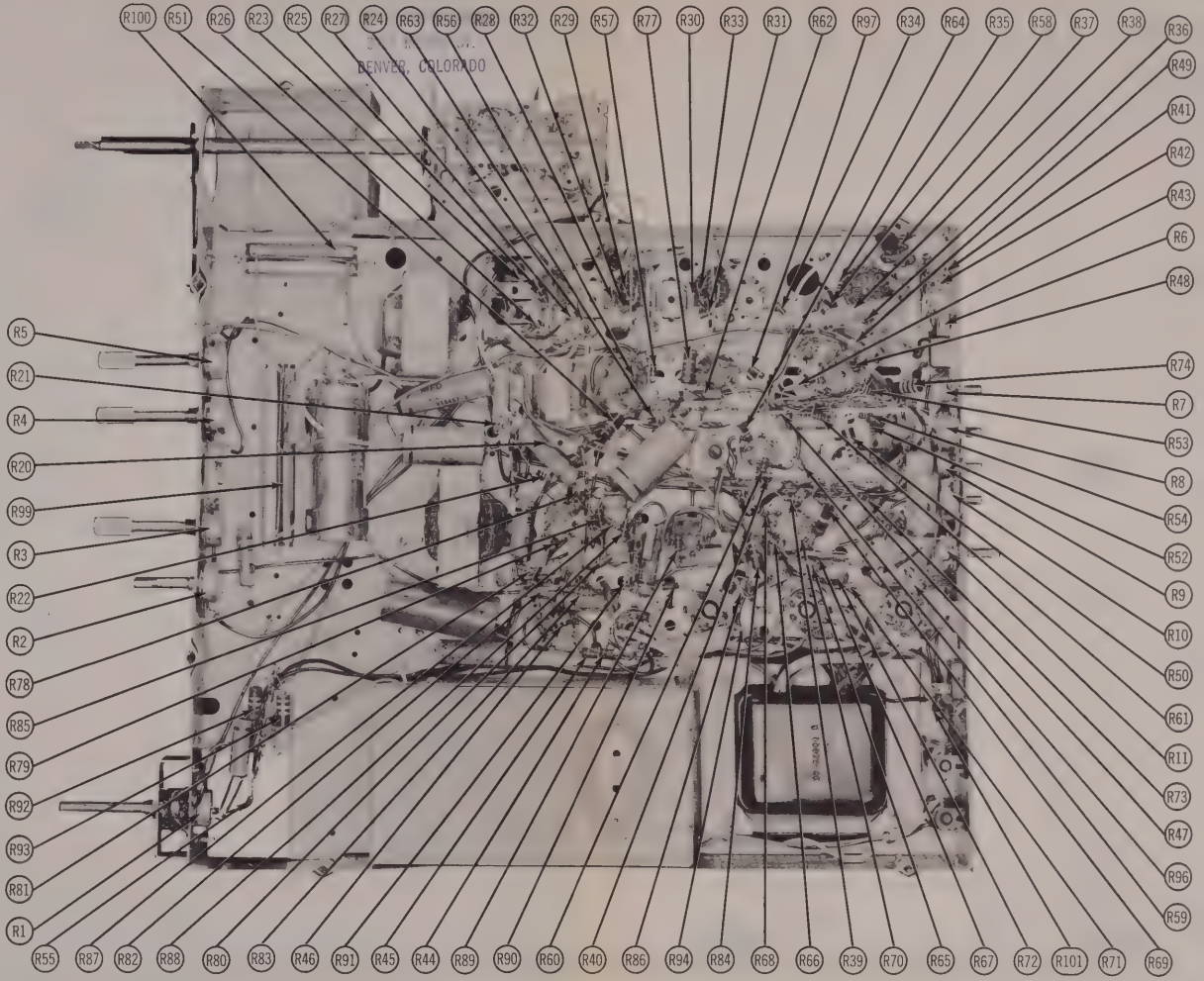
To eliminate Sound IF Detector Buzz, adjust the quieting control located on rear apron of chassis. Adjust for MINIMUM noise or hiss in sound.

FUSES

One fuse is used for Horiz. & Vert. Sweep Circuit protection. (For location see Tube Placement Chart.)

CENTERING

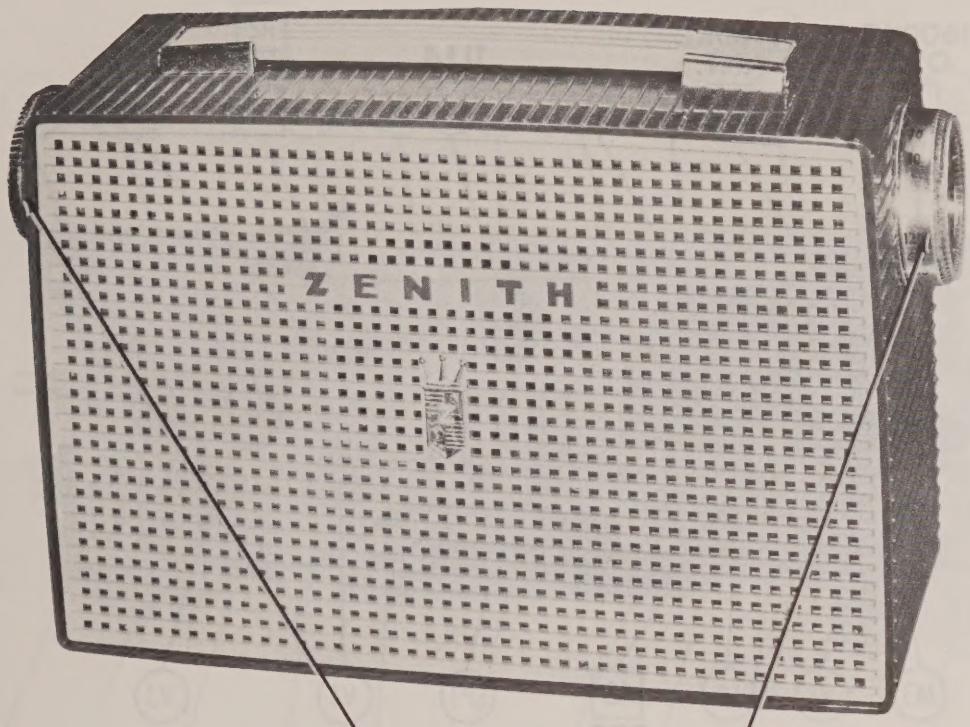
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ZENITH MODELS T404F, L, P, V, W, T405F, L, P, V, W, (Ch. 4T40, 4T41)

ZENITH MODELS T404F, L, P, V, W, T405F, L, P, V, W, (Ch. 4T40, 4T41)



DENVER, COLORADO

ZENITH MODELS T404F, L, P, V, W, T405F, L, P, V, W, (Ch. 4T40, 4T41)

TRADE NAME	Zenith Models T404F, L, P, V, W (Ch. 4T40), T405F, L, P, V, W (Ch. 4T41)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Four)	Types: 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (or) 7.5 Volts "A" Supply & 75 Volts "B" Supply In Pack Form
RATINGS	.11 Amp. @ 117 Volts AC (or) 65MA @ 7.5Volts DC & 10.5 MA @ 75 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400~ Mod.)	600KC	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output. IF AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6	"

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PARTS LIST AND DESCRIPTIONS

ZENITH
Model T404F

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	Det. -AVC-AF Amp	1U5	1U5	6BW	
V4	Output	3V4	3V4	6BX	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	ZENITH PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	▲80	150	22-2637			Q-085	
B	■20	150				MT-1530	
C	▲200	10					

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	CAP.	VOLT.	ZENITH PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	
C2	.02	200	22-1386	DF-203	817-02	PT412	
C3	100		22-5	DD-101	801-101	ZT-531	
C4	4700		22-4	DD-472	811-0047	DC525	
C5	.003	600	22-288	D6-302	GP2-333-302	PT623	
C6	10000		22-3	DD-301	811-01	DC511	
C7A	100		♦PA-117-1	♦PC-91	♦1407-03	UC-531	
B	5000					DC525	
C	5000					DC525	
C8	4700		22-2659	DD-472	811-0047	DC525	
C9	.1	200	22-827	DF-104		PT401	
C10	10000		22-3	DD-103	811-01	DC511	
C11	.05	200	22-829	DF-503		PT415	

♦ Items C8A, C7B, C7C, R9A, R9B and R9C are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	63-3258	Q11-137	A47-1Meg-S	AB-697	U-54	Volume
B	Shaft		Not Req.	Not Req.	FS-3	AK-3	Not Req.	Attach to R1A.
C	Switch		Not Req.	76-2	SWE-20	KB-2	US-27	Attach to R1A.

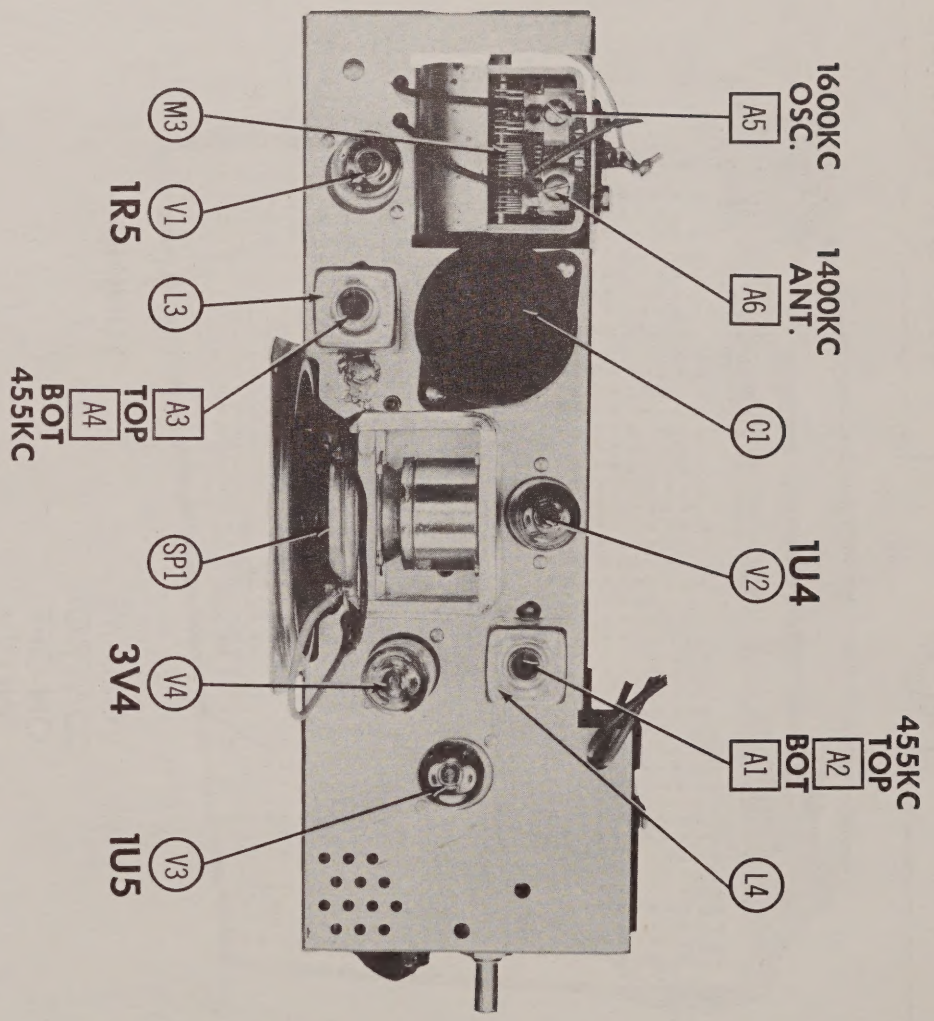
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R2	100KΩ	½	63-1870	BTS-100K	
R3	3900Ω	½	63-1810	BTS-3900	
R4	270Ω	½	63-1761	BTS-270	
R5	1000Ω	½	63-1786	BTS-1000	
R6	4.7Meg	½	63-1940	BTS-4.7Meg	
R7	470Ω	½	63-1771	BTS-470	
R8	15Meg	½	63-1961	BTS-15Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R9A	4.7Meg	½	♦PA-117-1	BTS-4.7Meg	
B	1Meg	½		BTS-1Meg	
C	2.2Meg	½		BTS-2.2Meg	
R10	4.7Meg	½	63-1940	BTS-4.7Meg	
R11	680Ω	½	63-1778	BTS-680	
R12	180Ω	4	63-2821	PW4-200	
R13	1750Ω	5	63-3259		
R14	100Ω	½	63-1744	BTS-100	

♦ Items C7A, C7B, C7C, R9A, R9B, R9C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	9.7KΩ	3.3Ω SEC 2 1Ω RES.	95-1424						

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3.3Ω	49-772	3A07	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	3.4Ω		S-22327				Includes Cabinet Back Core Part No. 149-85
L2	Osc. Coil	1Ω	6.8Ω	S-22322	14-1074	BC-394	70-Osc.	
L3	Input IF	20Ω	20Ω	95-1422	16-6758	BC-352	12-C1	
L4	Output IF	20Ω	20Ω	95-1423	16-6770	BC-355	12-C6	

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.062A	212-5	1003A	RS075	6S75	5M4	75	

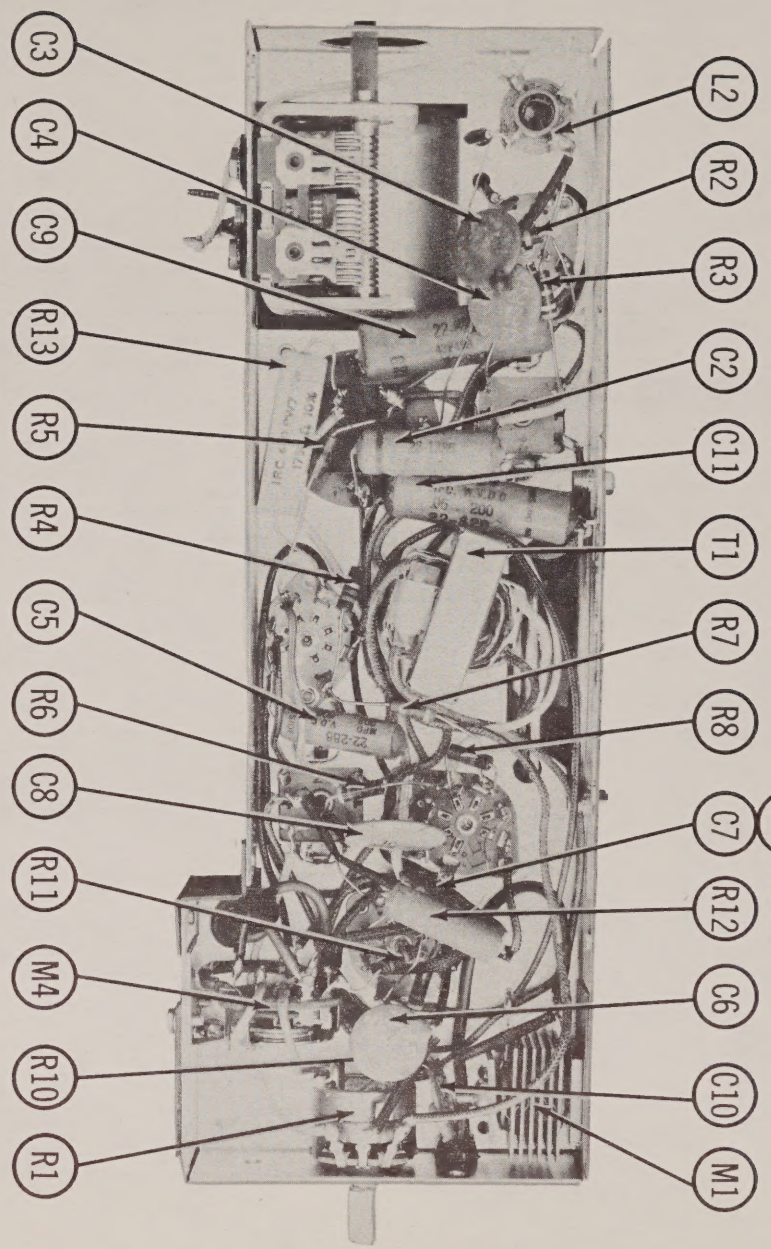
BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	7.5V "A" 75V "B"	Z775							

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuning Cap.	22-2636	2 Gang (16-375MMF, 12-105MMF)
M4	Switch	85-511	Power Changeover
	Cabinet Assy.	S-22876	Models T404V, T405V
	Cabinet Assy.	S-22877	Models T404P, T405P
	Cabinet Assy.	S-22878	Models T404F, T405F
	Cabinet Assy.	S-22879	Models T404L, T405L
	Cabinet Assy.	S-22880	Models T404W, T405W
	Cabinet	24-728	Rear Cover-Models T404V, T405V
	Cabinet	24-729	Rear Cover-Models T404P, T405P
	Cabinet	24-730	Rear Cover-Models T404F, T405F
	Cabinet	24-731	Rear Cover-Models T404L, T405L
	Cabinet	24-732	Rear Cover-Models T404W, T405W
	Cabinet	36-103	Handle-Models T404F, T405F
	Cabinet	36-104	Handle-Models T404P, T405P
	Cabinet	36-105	Handle-Models T404V, T405V
	Cabinet	36-106	Handle-Models T404L, T405L
	Cabinet	36-107	Handle-Models T404W, T405W
	Knob	46-1329	On-Off-Volume & Tuning
	Dial Scale	26-539	

CHASSIS—BOTTOM VIEW



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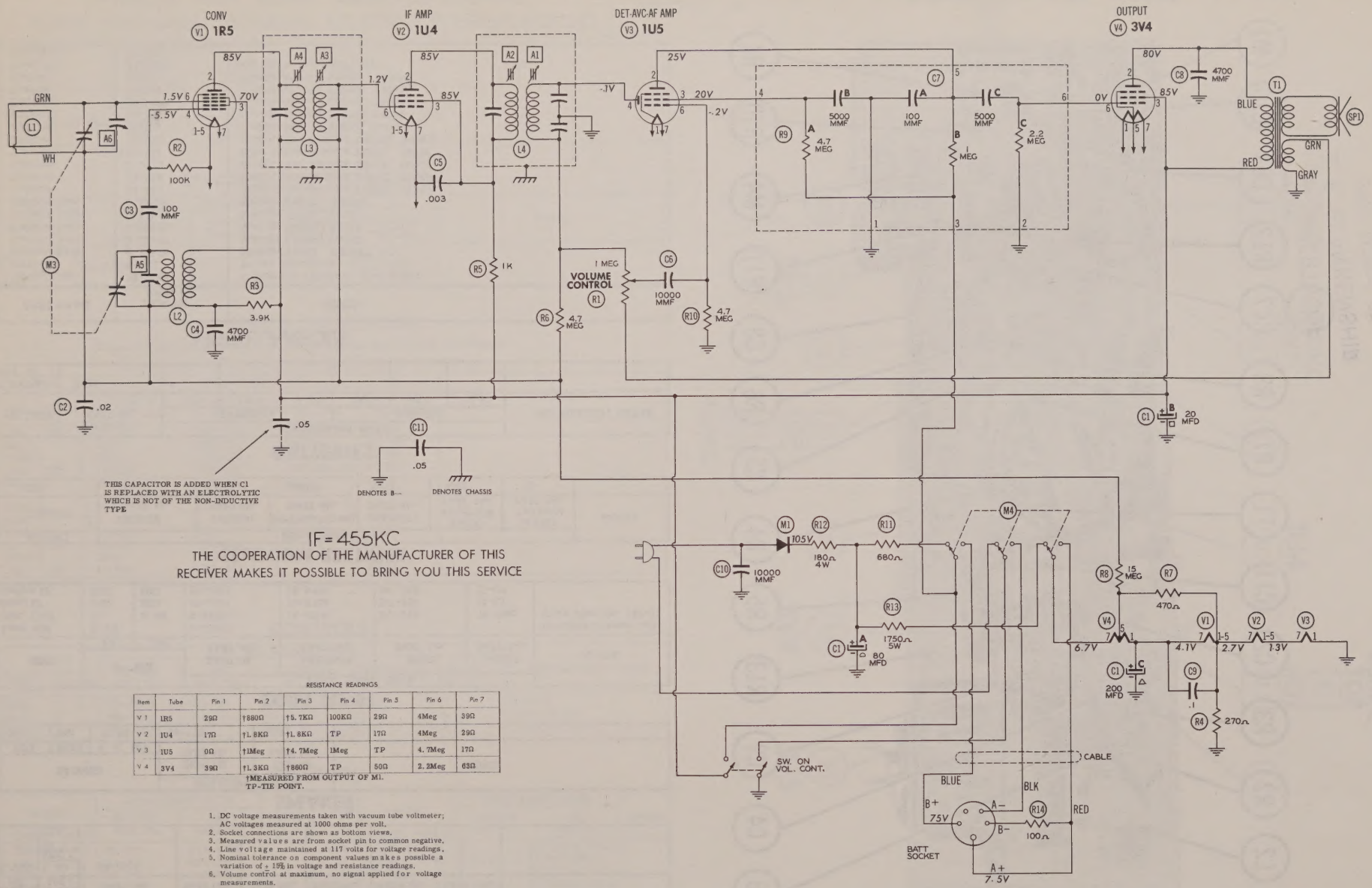
ZENITH
Model T404F



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	29Ω	†880Ω	†5.7KΩ	100KΩ	29Ω	4Meg	39Ω
V 2	1U4	17Ω	†1.8KΩ	†1.8KΩ	TP	17Ω	4Meg	29Ω
V 3	1U5	0Ω	†1Meg	†4.7Meg	1Meg	TP	4.7Meg	17Ω
V 4	3V4	39Ω	†1.3KΩ	†860Ω	TP	50Ω	2.2Meg	63Ω

†MEASURED FROM OUTPUT OF M1.
TP-TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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